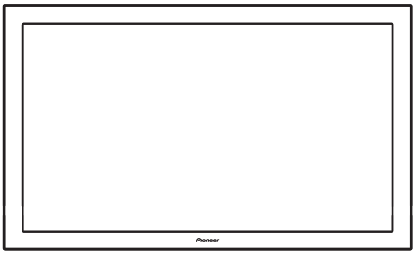
Pioneer

Service Manual



KRP-500P

ORDER NO.
ARP3506

PLASMA DISPLAY

KRP-500P

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Model	Type	Power Requirement	Remarks
KRP-500P	WYSIXK5	AC 220 V to 240 V	
KRP-500P	WYS5	AC 220 V to 240 V	
KRP-500P	LFT	AC 110 V to 240 V	
KRP-500P	WA5	AC 220 V to 240 V	

For details, refer to "Important Check Points for good servicing".

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ⓒ**PIONEER CORPORATION 2008**

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SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

This product contains certain electrical parts contain chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm.

Health & Safety Code Section 25249.6 - Proposition 65

NOTICE
(FOR CANADIAN MODEL ONLY)
Fuse symbols (fast operating fuse) and/or (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE
(POUR MODÈLE CANADIEN SEULEMENT)
Les symboles de fusible (fusible de type rapide) et/ou (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

SAFETY PRECAUTIONS

NOTICE : Comply with all cautions and safety related notes located on or inside the cabinet and on the chassis.

The following precautions should be observed :

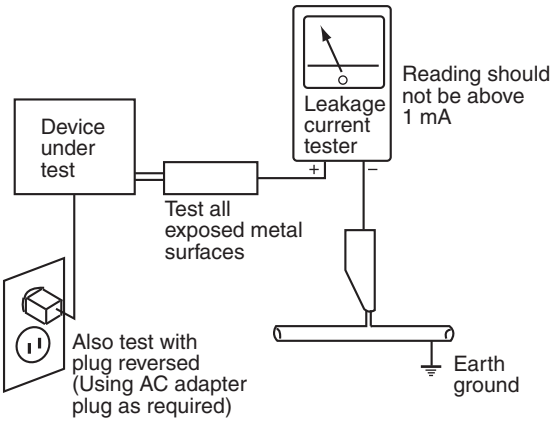
1. When service is required, even though the PDP UNIT an isolation transformer should be inserted between the power line and the set in safety before any service is performed.
2. When replacing a chassis in the set, all the protective devices must be put back in place, such as barriers, nonmetallic knobs, adjustment and compartment covershields, isolation resistor-capacitor, etc.
3. When service is required, observe the original lead dress. Extra precaution should be taken to assure correct lead dress in the high voltage circuitry area.
4. Always use the manufacture's replacement components. Especially critical components as indicated on the circuit diagram should not be replaced by other manufacture's. Furthermore where a short circuit has occurred, replace those components that indicate evidence of overheating.
5. Before returning a serviced set to the customer, the service technician must thoroughly test the unit to be certain that it is completely safe to operate without danger of electrical shock, and be sure that no protective device built into the set by the manufacture has become defective, or inadvertently defeated during servicing. Therefore, the following checks should be performed for the continued protection of the customer and servicetechnician.
6. Perform the following precautions against unwanted radiation and rise in internal temperature.
   - Always return the internal wiring to the original styling.
   - Attach parts (Gascket, Ferrite Core, Ground, Rear Cover, Shield Case etc.) surely after disassembly.
7. Perform the following precautions for the PDP panel.
   - When the front case is removed, make sure nothing hits the panel face, panel corner, and panel edge (so that the glass does not break).
   - Make sure that the panel vent does not break. (Check that the cover is attached.)
   - Handle the FPC connected to the panel carefully. Twisting or pulling the FPC when connecting it to the connector will cause it to peel off from the panel.
8. Pay attention to the following.
   - Pay extreme caution when the front case and rear panel are removed because this may cause a high risk of disturbance to TVs and radios in the surrounding.

Leakage Current Cold Check

With the AC plug removed from an AC power source, place a jumper across the two plug prongs. Turn the AC power switch on. Using an insulation tester (DC 500V), connect one lead to the jumpered AC plug and touch the other lead to each exposed metal part (input/output terminals, screwheads, metal overlays, control shafts, etc.), particularly any exposed metal part having a return path to the chassis. Exposed metal parts having a return path to the chassis should have a minimum resistor reading of 4 MΩ.
The below 4 MΩ resistor value indicate an abnormality which require corrective action. Exposed metal parts not having a return path to the chassis will indicate an open circuit.

Leakage Current Hot Check

Plug the AC line cord directly into an AC power source (do not use an isolation transformer for this check).
Turn the AC power switch on.
Using a "Leakage Current Tester (Simpson Model 229 equivalent)", measure for current from all exposed metal parts of the cabinet (input/output terminals, screwheads, metal overlays, control shaft, etc.), particularly any exposed metal part having a return path to the chassis, to a known earth ground (water pipe, conduit, etc.). Any current measured must not exceed 1 mA.


Reading should not be above 1 mA
Leakage current tester
+
–
Device under test
Test all exposed metal surfaces
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE SET TO THE CUSTOMER.

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in PIONEER set have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.
Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.
The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire or other hazards.
Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

[Important Check Points for Good Servicing]

In this manual, procedures that must be performed during repairs are marked with the below symbol.
Please be sure to confirm and follow these procedures.

1. Product safety

Please conform to product regulations (such as safety and radiation regulations), and maintain a safe servicing environment by following the safety instructions described in this manual.

① Use specified parts for repair.

Use genuine parts. Be sure to use important parts for safety.

② Do not perform modifications without proper instructions.

Please follow the specified safety methods when modification(addition/change of parts) is required due to interferences such as radio/TV interference and foreign noise.

③ Make sure the soldering of repaired locations is properly performed.

When you solder while repairing, please be sure that there are no cold solder and other debris.
Soldering should be finished with the proper quantity. (Refer to the example)

④ Make sure the screws are tightly fastened.

Please be sure that all screws are fastened, and that there are no loose screws.

⑤ Make sure each connectors are correctly inserted.

Please be sure that all connectors are inserted, and that there are no imperfect insertion.

⑥ Make sure the wiring cables are set to their original state.

Please replace the wiring and cables to the original state after repairs.
In addition, be sure that there are no pinched wires, etc.

⑦ Make sure screws and soldering scraps do not remain inside the product.

Please check that neither solder debris nor screws remain inside the product.

⑧ There should be no semi-broken wires, scratches, melting, etc. on the coating of the power cord.

Damaged power cords may lead to fire accidents, so please be sure that there are no damages.
If you find a damaged power cord, please exchange it with a suitable one.

⑨ There should be no spark traces or similar marks on the power plug.

When spark traces or similar marks are found on the power supply plug, please check the connection and advise on secure connections and suitable usage. Please exchange the power cord if necessary.

⑩ Safe environment should be secured during servicing.

When you perform repairs, please pay attention to static electricity, furniture, household articles, etc. in order to prevent injuries.
Please pay attention to your surroundings and repair safely.

2. Adjustments

To keep the original performance of the products, optimum adjustments and confirmation of characteristics within specification.
Adjustments should be performed in accordance with the procedures/instructions described in this manual.

3. Lubricants, Glues, and Replacement parts

Use grease and adhesives that are equal to the specified substance.
Make sure the proper amount is applied.

4. Cleaning

For parts that require cleaning, such as optical pickups, tape deck heads, lenses and mirrors used in projection monitors, proper cleaning should be performed to restore their performances.

5. Shipping mode and Shipping screws

To protect products from damages or failures during transit, the shipping mode should be set or the shipping screws should be installed before shipment. Please be sure to follow this method especially if it is specified in this manual.

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1. SERVICE PRECAUTIONS

1.1 NOTES ON SOLDERING

- For environmental protection, lead-free solder is used on the printed circuit boards mounted in this unit.
  Be sure to use lead-free solder and a soldering iron that can meet specifications for use with lead-free solders for repairs accompanied by reworking of soldering.

- Compared with conventional eutectic solders, lead-free solders have higher melting points, by approximately 40 ºC.
  Therefore, for lead-free soldering, the tip temperature of a soldering iron must be set to around 373 ºC in general, although the temperature depends on the heat capacity of the PC board on which reworking is required and the weight of the tip of the soldering iron.

Do NOT use a soldering iron whose tip temperature cannot be controlled.

Compared with eutectic solders, lead-free solders have higher bond strengths but slower wetting times and higher melting temperatures (hard to melt/easy to harden).

The following lead-free solders are available as service parts:
- Parts numbers of lead-free solder:
  GYP1006 1.0 in dia.
  GYP1007 0.6 in dia.
  GYP1008 0.3 in dia.

1.2 NOTES SPECIFIC TO THIS PRODUCT

- In same cases, there are silicon sheets on back side of POWER SUPPLY Unit, X DRIVE Assy and Y DRIVE Assy due to heat release of these boards to panel chassis. When replacing these boards, check backside of them and if silicon sheets are on there, surely put these silicon sheets again to the original location of them.

1.3 CHARGED SECTION AND HIGH VOLTAGE GENERATING POINT

■ Charged Section

The places where the commercial AC power is used without passing through the power supply transformer.
If the places are touched, there is a risk of electric shock. In addition, the measuring equipment can be damaged if it is connected to the GND of the charged section and the GND of the non-charged section while connecting the set directly to the commercial AC power supply. Therefore, be sure to connect the set via an insulated transformer and supply the current.

1. Power Cord
2. AC Inlet
3. Power Switch
4. Fuse (In the POWER SUPPLY Unit)
5. STB Transformer and Converter Transformer (In the POWER SUPPLY Unit)
6. Other primary side of the POWER SUPPLY Unit

■ High Voltage Generating Point

The places where voltage is 100 V or more except for the charged places described above. If the places are touched, there is a risk of electric shock.
The VSUS voltage remains for several minutes after the power to the unit is turned off. These places must not be touched until about 10 minutes after the power is turned off, or it is confirmed with a tester that there is no residual VSUS voltage.

If the procedures described in "5.6 [1] PANEL DRIVE-POWER ON/OFF FUNCTION" are performed before the power is turned off, the voltage will be discharged in about 30 seconds.

50F X DRIVE Assy ..... (205 V)
50F Y DRIVE Assy ..... (–280 V to 420 V)
50F SCAN A Assy ..... (–280 V to 420 V)
50F SCAN B Assy ..... (–280 V to 420 V)

: Part is Charged Section.

: Part is the High Voltage Generating Points other than the Charged Section.

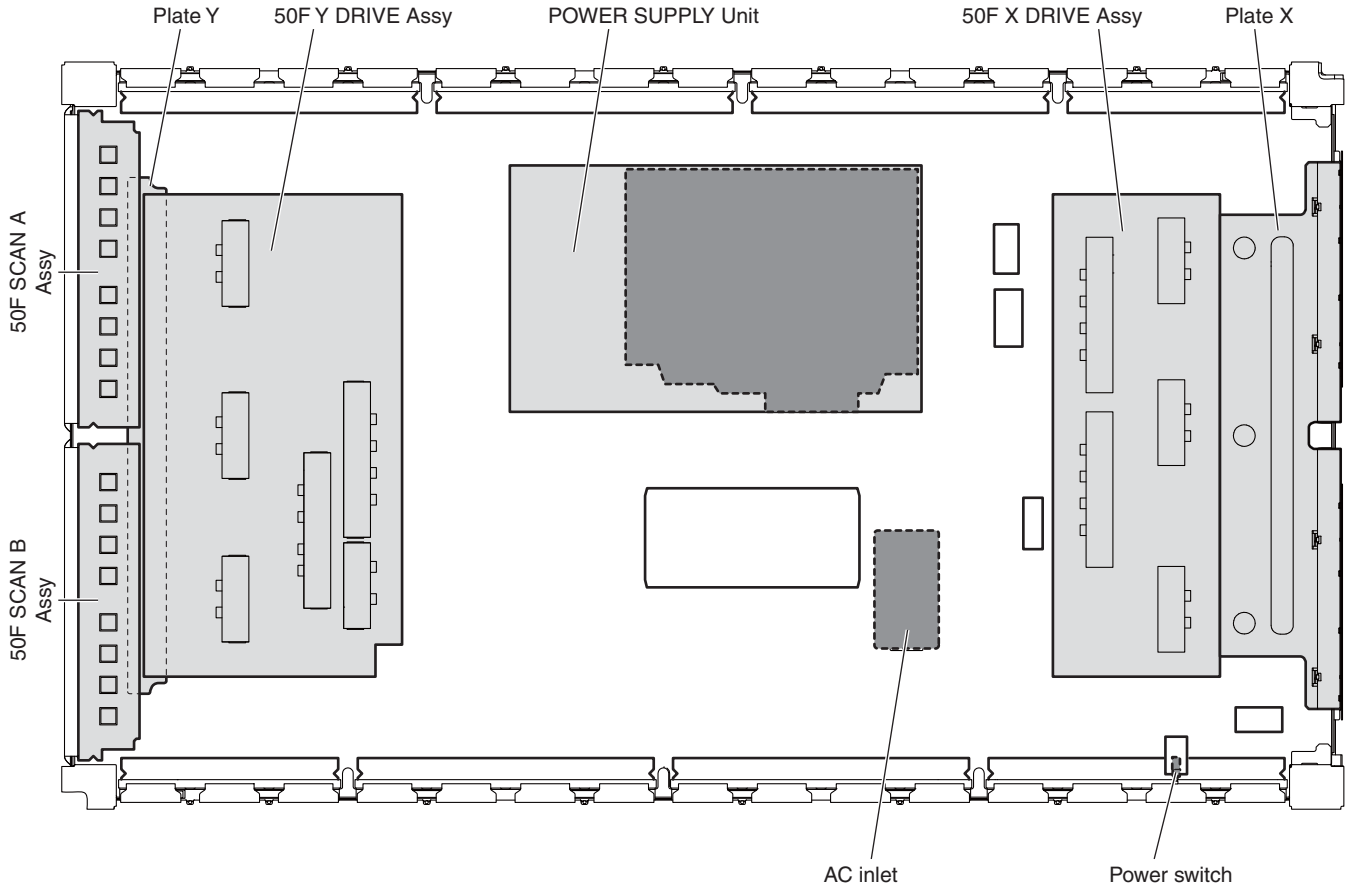
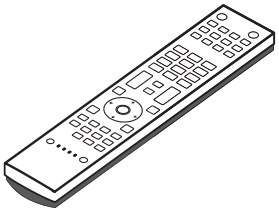


Fig. High Voltage Generating Point (Rear view)

2. SPECIFICATIONS
2.1 ACCESSORIES

■ KRP-500P/WYSIXK5

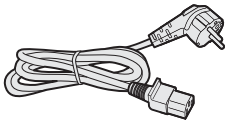
- Remote control unit (AXD1562)



- Power cable

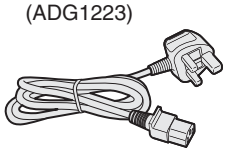
Only the power cable appropriate for your country or region is supplied:

(ADG1214)



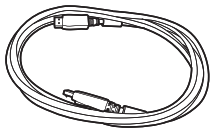
For Europe, except UK and Republic of Ireland

(ADG1223)

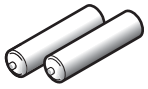


For UK and Republic of Ireland

- System cable (2.9 m) (ADF1041)



- Alkaline dry cell battery (LR6, AA) (2)



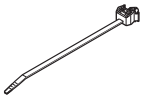
(for remote control unit)

- Ferrite core (ATX1039)(CTX1089)

Ferrite core x 2 (Grey x 1, Black x 1)

Cable tie (for ferrite core)

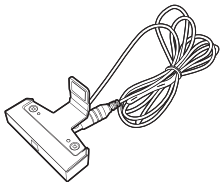
- Binder Assy (AEC2158)
  - Cable clamps (4)



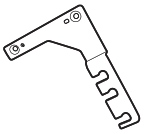
- Cleaning cloth (AED1285)

- Cable guide (2) (AEC2167)

- Color sensor module (AXF1196)



Colour Sensor

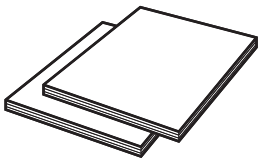


Colour Sensor Bracket (when attached to the top right of the rear panel)

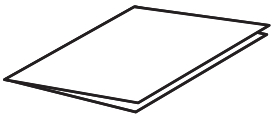
Screw x 2 (M5 x 8 mm)

Cable guide

- Operating instructions (2) (ARC1609, ARE1494)

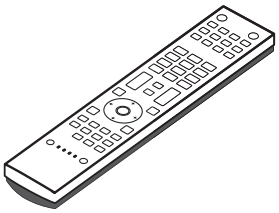


- Warranty card



■ KRP-500P/WYS5

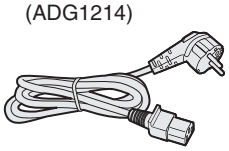
- Remote control unit (AXD1562)



- Power cable

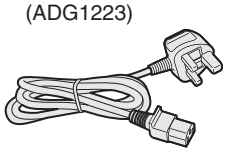
Only the power cable appropriate for your country or region is supplied:

(ADG1214)



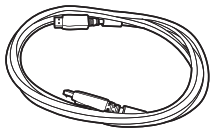
For Europe, except UK and Republic of Ireland

(ADG1223)

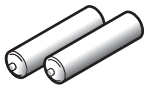


For UK and Republic of Ireland

- System cable (2.9 m) (ADF1041)



- Alkaline dry cell battery (LR6, AA) (2)



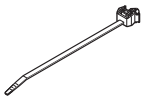
(for remote control unit)

- Ferrite core (ATX1039)(CTX1089)

Ferrite core x 2 (Grey x 1, Black x 1)

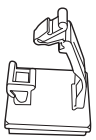
Cable tie (for ferrite core)

- Binder Assy (AEC2158)
  - Cable clamps (4)

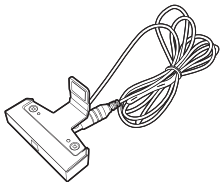


- Cleaning cloth (AED1285)

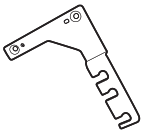
- Cable guide (2) (AEC2167)



- Color sensor module (AXF1196)



Colour Sensor

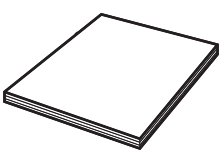


Colour Sensor Bracket (when attached to the top right of the rear panel)

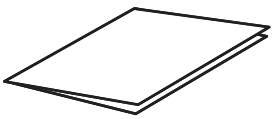
Screw x 2 (M5 x 8 mm)

Cable guide

- Operating instructions (ARC1619)

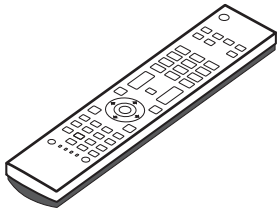


- Warranty card



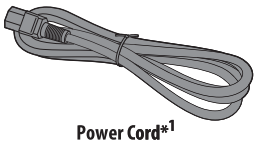
■ KRP-500P/LFT

- Remote control unit (AXD1567)

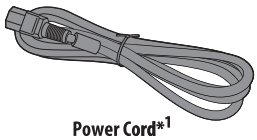


- Power cable

*1 Either one of the power cords is supplied depending on the country.

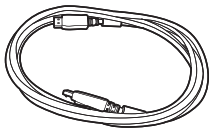


Power Cord*1

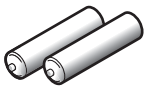


Power Cord*1 (AXY1194) (with a ferrite core attached)

- System cable (2.9 m) (ADF1041)

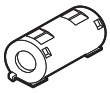


- Dry cell battery (R6, AA) (2)



(for remote control unit)

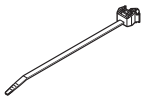
- Ferrite core (ATX1039)



Ferrite core

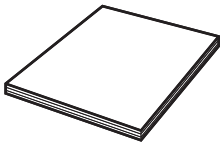
Cable tie (for ferrite core)

- Binder Assy (AEC2158)
  - Cable clamps (4)

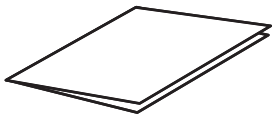


- Cleaning cloth (AED1285)

- Operating instructions (ARE1495)

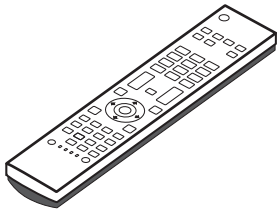


- Warranty card



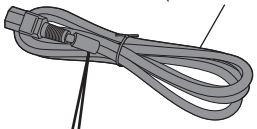
■ KRP-500P/WA5

- Remote control unit (AXD1569)

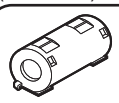


- Power cable

AC power cord (ADG1209)



- Ferrite core (ATX1039)

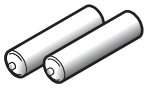


Ferrite core

Cable tie (for ferrite core)

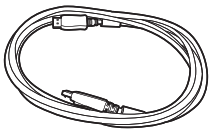
- When only the cable tie is necessary, please order a nylon binder (AEC-093).

- Dry cell battery (R6, AA) (2)

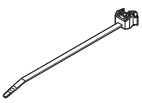


(for remote control unit)

- System cable (2.9 m) (ADF1041)

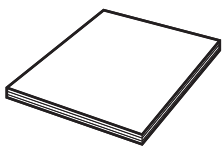


- Binder Assy (AEC2158)
  - Cable clamps (4)

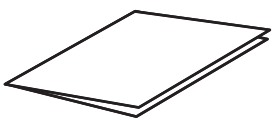


- Cleaning cloth (AED1285)

- Operating instructions (ARC1610)



- Warranty card



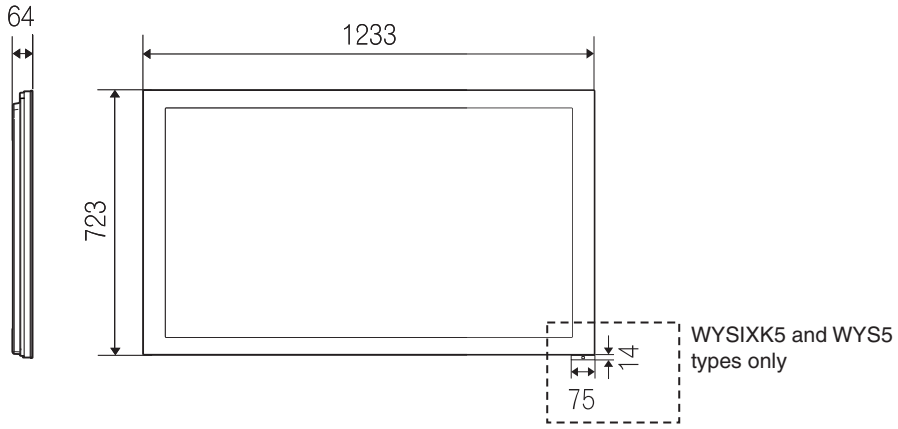
2.2 SPECIFICATIONS

Item		50" display, model: KRP-500P
Number of pixels		1920 x 1080 pixels
Audio amplifier		18 W + 18 W (1 kHz, 10 %, 6 Ω)
Sound Effect		SRS FOCUS/SRS/SRS TruBass/SRS Definition
Power Requirements		220 V to 240 V AC, 50 Hz/60 Hz, 388 W (0.3 W Standby) : For WYSIXK5 and WYS5 types 110 V to 240 V AC, 50 Hz/60 Hz, 386 W (0.2 W Standby/110 V AC) : For LFT type 220 V to 240 V AC, 50 Hz/60 Hz, 409 W (0.4 W Standby) : For WA5 type
Weight		Main unit: 31.4 kg (69.2 lbs) Colour Sensor: 0.1 kg (0.2 lbs) : WYSIXK5 and WYS5 types only
Terminals Rear	SPEAKERS	6 Ω to 16 Ω
	SYSTEM CABLE	1
	Colour Sensor	1

Dimensions (Display)

KRP-500P

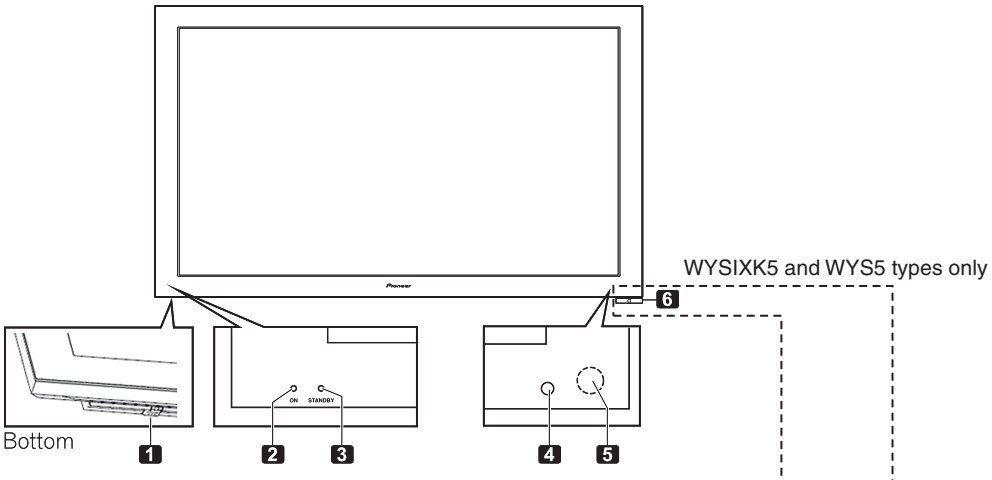
Unit: mm



(Colour sensor attached to the bottom
right of the front panel as recommended)

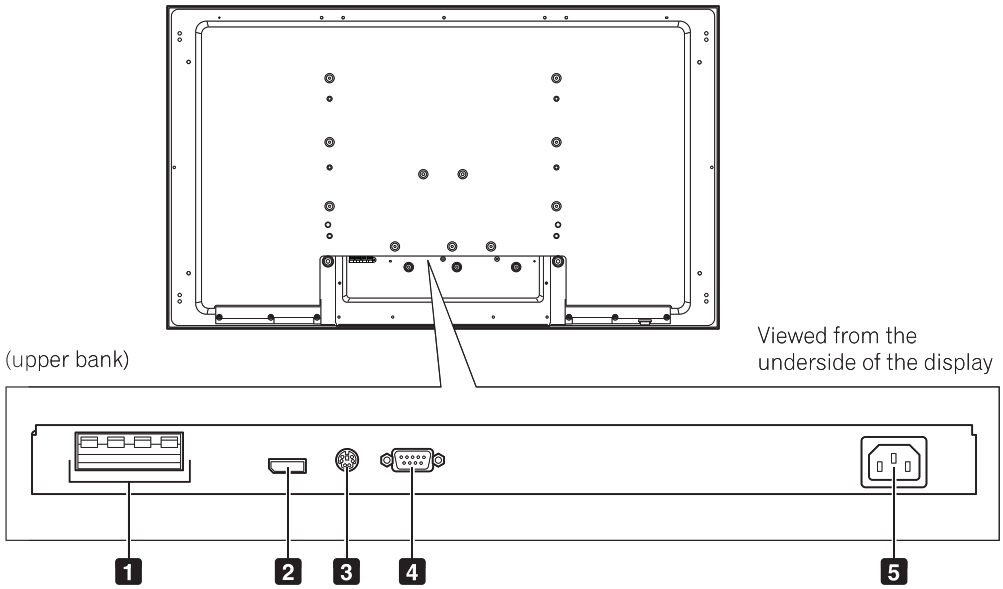
2.3 PANEL FACILITIES

(Front)



1 Power On (⏻) button
2 Power ON indicator
3 STANDBY indicator
4 Room Light sensor
5 Remote Control sensor
6 Colour sensor

(Rear)



1 SPEAKERS terminals (right/left)
- Do not connect any devices to the speaker terminals other than the speakers specified.
- Do not leave speaker cable wires bare and exposed at the terminals. Exposed wires can result in an electrical short causing malfunction or damage to the system.

2 SYSTEM CABLE terminal

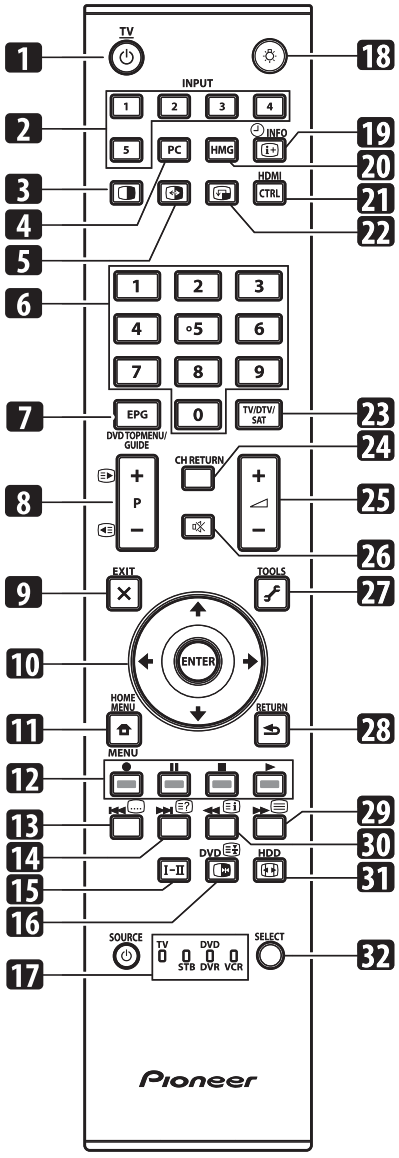
3 Color sensor terminal — LFT and WA5 types
(used when connecting the optional color sensor)

4 RS-232C terminal (SERVICE ONLY)
(used for factory setup)

5 AC IN terminal

Remote Control Unit (for WYSIXK5 and WYS5 types)

This section describes the functions of the buttons available when the TV mode has been selected by using the **SELECT** button.



1 **TV :** Turns on the power to the flat screen TV or places it into the standby mode.

2 **INPUT:** Selects an input source of the flat screen TV. (“INPUT 1”, “INPUT 2”, “INPUT 3”, “INPUT 4”, “INPUT 5”)

3 **:** Switches the screen mode among 2-screen, picture-in-picture, and single-screen.

4 **PC:** Selects the PC terminal as an input source.

5 **:** Switches between the two screens when in the 2-screen or picture-in-picture mode.

6 **0 to 9:** TV/External input mode: Selects a channel.
Teletext mode: Selects a page.
Turns the power on when the STANDBY indicator lights red.

7 **EPG:** Displays the Electronic Programme Guide in DTV/SAT (Satellite) input mode.

8 **P+/P–:** TV/External input mode: Selects a channel.
/: Teletext mode: Selects a page.

9 **EXIT:** Returns to the normal screen in one step.

10 **/// :** Selects a desired item on the setting screen.
ENTER: Executes a command.

11 **HOME MENU:** Displays the HOME MENU screen.

12 **Colour (RED/GREEN/YELLOW/BLUE):**
Controls a BD player for HDMI Control functions only.

13 **:** Jumps to Teletext subtitle page.
Turns subtitle on and off in DTV input mode depending on the broadcast.

14 **:** Displays hidden characters.

15 **I–II:** Sets the sound multiplex mode.

16 **:** TV/External input mode: Freezes a frame from a moving image. Press again to cancel the function.
: Teletext mode: Stops updating Teletext pages. Press again to release the hold mode.

17 **TV, STB, DVD/DVR, VCR:** These indicators show the current selection and status when you control other connected equipment, using the supplied remote control unit.

18 **:** Lights up buttons.
Lights turn off if no operations are performed within five seconds. This is used for remote control use in dark locations.

19 **INFO:** Displays the channel information.
Displays the banner information.

20 **HMG (Home Media Gallery):** Displays the Home Media Gallery screen.

21 **HDMI CTRL:** Displays the HDMI Control menu.

22 **:** Moves the location of the small screen when in the picture-in-picture mode.

23 **TV/DTV/SAT:** Switches the mode among TV, DTV and SAT.

24 **CH RETURN:** Returns to the previous channel.

25 **+/–:** Sets the volume.

26 **:** Mutes the sound.

27 **TOOLS:** Displays the TOOLS Menu.

28 **RETURN:** Restores the previous menu screen.

29 **:** Selects the Teletext mode (all TV image, all TEXT image, TV/TEXT image).

30 **:** Displays an Index page for the CEEFAX/FLOF format.
Displays a TOP Over View page for the TOP format.

31 **:** Selects the screen size.

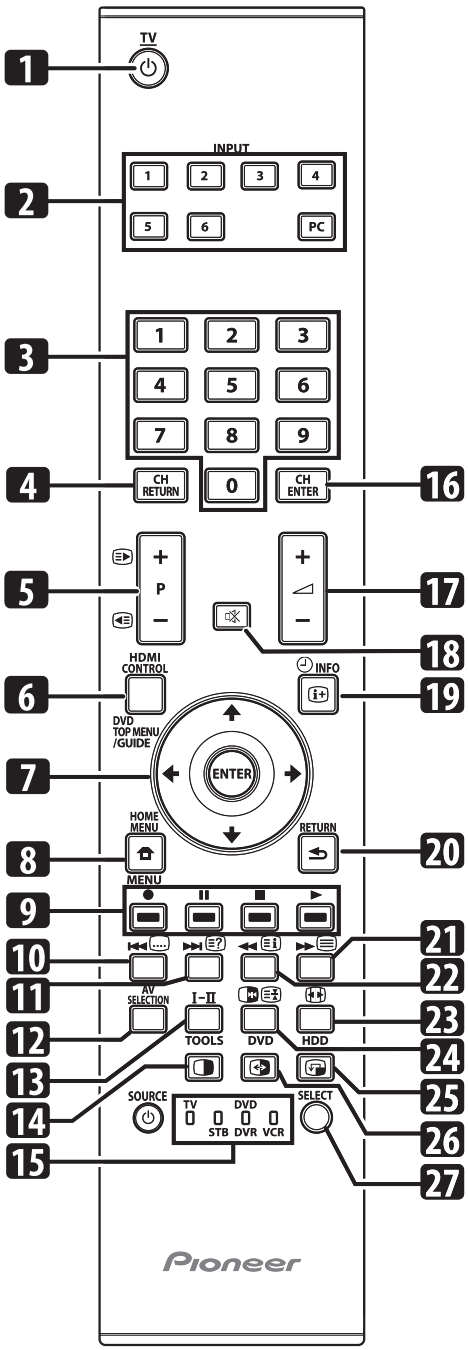
32 **SELECT:** Switches the selection among TV, STB, DVD/DVR, and VCR, so that you can control other connected equipment, using the supplied remote control unit.

Note

- When using the remote control unit, point it at the display panel.

Remote Control Unit (for LFT type)

This section describes the functions of the buttons available when the TV mode has been selected by using the **SELECT** button.



1 ⏻: Turns on the power to the flat screen TV or places it into the standby mode.

2 **INPUT:** Selects an input source. (“INPUT 1”, “INPUT 2”, “INPUT 3”, “INPUT 4”, “INPUT 5”, “INPUT 6” or “PC”)

3 **0 to 9:** TV/External input mode: Selects a channel.
Teletext mode: Selects a page.
Turns the power on when the STANDBY indicator lights red.

4 **CH RETURN:** Returns to the previously selected channel.

5 **P+/P–:** TV/External input mode: Selects a channel.

**/: Teletext mode: Selects a page.

6 **HDMI CONTROL:** Displays the HDMI Control menu.

7 **/**/**/**: Selects a desired item on the setting screen.

ENTER: Executes a command.

8 **HOME MENU:** TV/External Input mode: Displays the HOME MENU screen.

9 **Color (RED/GREEN/YELLOW/BLUE):** Teletext mode: Selects a page.

10 **:** Jumps to the Teletext subtitle page.

11 **:** Displays hidden characters.

12 **AV SELECTION:** Selects audio and video settings. (AV source: OPTIMUM, STANDARD, DYNAMIC, MOVIE, GAME, SPORT, USER. PC source: STANDARD, USER.)

13 **I–II:** Sets the sound multiplex mode.

14 **:** Press to select 2-screen, picture-in-picture or single screen mode.

15 **TV, STB, DVD/DVR, VCR:** These indicators show the current selection and status when you control other connected equipment, using the supplied remote control unit.

16 **CH ENTER:** Executes a channel selection by the number buttons.

17 **+/–:** Sets the volume.

18 **:** Mutes the sound.

19 **INFO:** TV/External input mode: Displays the channel information.

20 **RETURN:** Restores the previous menu screen.

21 **:** Selects the Teletext mode (all TV image, all TEXT image, TV/TEXT image).

22 **:** Teletext mode: Displays an Index page for the CEEFAX/FLOF format.

23 **:** TV/External input mode: Selects the screen size.

24 **:** TV/External input mode: Freezes a frame from a moving image. Press again to cancel the function.

: Teletext mode: Stops updating Teletext pages. Press again to release the hold mode.

25 **:** Moves the position of the sub screen when in picture-in-picture mode.

26 **:** Swaps the main and sub screens when in picture-in-picture or 2-screen mode.

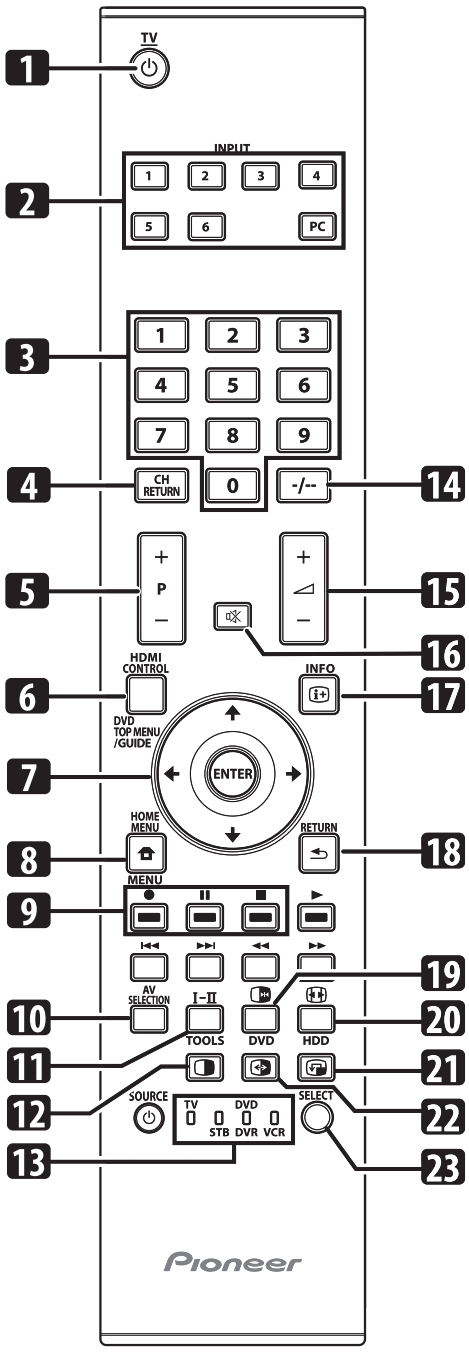
27 **SELECT:** Switches the selection among TV, STB, DVD/DVR, and VCR, so that you can control other connected equipment, using the supplied remote control unit.

Note

- When using the remote control unit, point it at the display panel.

Remote Control Unit (for WA5 type)

This section describes the functions of the buttons available when the TV mode has been selected by using the **SELECT** button.



1 ⏻: Turns on the power to the flat screen TV or places it into the standby mode.

2 **INPUT:** Selects an input source ("INPUT 1", "INPUT 2", "INPUT 3", "INPUT 4", "INPUT 5", "INPUT 6" or "PC")

3 **0 to 9:** TV/External input mode: Selects a channel. Turns the power on when the STANDBY indicator lights red.

4 **CH RETURN:** Returns to the previously selected channel.

5 **P+/P–:** TV/External input mode: Selects a channel.

6 **HDMI CONTROL:** Displays the HDMI Control menu.

7 **↑/↓/←/→:** Selects a desired item on the setting screen.

ENTER: Executes a command.

8 **HOME MENU:** TV/External Input mode: Displays the HOME MENU screen.

9 **●/II/■:** Used when operating the Home Gallery function.

10 **AV SELECTION:** Selects audio and video settings. (AV source: OPTIMUM, STANDARD, DYNAMIC, MOVIE, GAME, SPORT, USER. PC source: STANDARD, USER.)

11 **I–II:** Sets the sound multiplex mode.

12 **:** Press to select 2-screen, picture in picture or single screen mode.

13 **TV, STB, DVD/DVR, VCR:** These indicators show the current selection and status when you control other connected equipment, using the supplied remote control unit.

14 **–/––:** Executes a channel selection.

15 **+/–:** Sets the volume.

16 **:** Mutes the sound.

17 **INFO:** TV/External input mode: Displays the channel information.

18 **RETURN:** Restores the previous menu screen.

19 **:** TV/External input mode: Freezes a frame from a moving image. Press again to cancel the function.

20 **:** TV/External input mode: Selects the screen size.

21 **:** Moves the position of the sub screen when in picture in picture mode.

22 **:** Swaps the main and sub screens when in picture in picture or 2-screen mode.

23 **SELECT:** Switches the selection among TV, STB, DVD/DVR, and VCR, so that you can control other connected equipment, using the supplied remote control unit.

Note

- When using the remote control unit, point it at the display.

3. BASIC ITEMS FOR SERVICE
3.1 CHECK POINTS AFTER SERVICING

Items to be checked after repair (PDP)

To ensure the quality of the product after repair, check the recommended items shown below:

No.	Procedures	Item to be checked
1	Check if all the symptoms pointed out by the customer have been addressed.	The symptoms in question must not be reproduced.
2	Connect the peripheral equipment.	Connect all external peripheral equipment as originally connected and check if the connections are correct.
3	Check the video and audio.	Tune in to the stations that the customer would normally receive and check if video and audio are normal.
4	Check the buttons and controls.	Use the buttons and controls on the remote control unit and main unit and check if they operate properly.
5	Check the cabinet.	Check for any scratches or dirt that have been made or attached on the cabinet after receiving the product for repair.

See the table below for the items to be checked regarding video and audio:

Item to be checked regarding video	Item to be checked regarding audio
Block noise	Distortion
Horizontal noise	Noise
Dot noise	Volume too low
Disturbed image (video jumpiness)	Volume too high
Too dark	Volume fluctuating
Too bright	Sound interrupted
Mottled color	

Cleaning

Name	Part No.	Remarks
Cleaning paper	GED-008	Used to fan cleaning. Refer to “9.7 CHASSIS SECTION (1/2)”.

Quick Reference upon Service Visit ①
Notes, PD/SD diagnosis, and methods for various settings

Notes when visiting for service

1. Notes when disassembling/reassembling

① **Rear case**
When reassembling the rear case, the screws must be tightened in a specific order. Be careful not to tighten them in the wrong order forcibly. For details, see "Rear Case" in "7. DISASSEMBLY".

② **Attaching screws for the HDMI and system cable terminals**
When attaching the HDMI and system cable terminals after replacing the Assembly, secure the terminals manually with a screwdriver, but not with an electric screwdriver.
If you tighten the screws too tightly with an electric screwdriver, the screw heads may be damaged, in which case the screws cannot be untightened/tightened any more.

2. On parts replacement

① **How to discharge before replacing the Assys**
A charge of significant voltage remains in the Plasma Panel even after the power is turned off. Safely discharge the panel before replacement of parts, in either manner indicated below:
A: Let the panel sit at least for 3 minutes after the power is turned off.
B: Turn the Large Signal System off before the power is turned off then, after 1 minute, turn the power off.
For details, see "5.6 [1] PANEL DRIVE-POWER ON/OFF FUNCTION".

② **On the settings after replacement of the Assys**
Some boards need settings made after replacement of the Assys. For details, see "8. EACH SETTING AND ADJUSTMENT".

3. On various settings

① **Setting in Factory mode**
After a Mask indication into the panel is performed, be sure to set the Mask setting to "OFF" then exit Factory mode.

PD

No. of LEDs flashing	MR
Red 1	MR_POWER
	Panel
Red 2	POWER
Red 3	SCAN
Red 4	SCN-5V
Red 6	Y-DCDC
Red 7	Y-SUS
Red 8	ADRS
Red 10	X-DCDC
Red 11	X-SUS
Red 12	DIG-DCDC
Red 15	UNKNOWN

SD

Panel	No. of LEDs flashing	MR
SQ_LSI	Blue 1	
Module Device communication	Blue 2	
DIGITAL-RST2	Blue 3	
Panel temperature	Blue 4	
Audio	Blue 5	Audio (MSP)
Module microcomputer communication	Blue 6	
	Blue 7	Main 3-wire serial communication
Panel main IIC communication	Blue 8	Main IIC communication
	Blue 9	Main microcomputer communication
FAN	Blue 10	FAN
Unit high temperature	Blue 11	Unit high temperature
	Blue 12	D-TUNER communication
DC-IN	Blue 13	RST2/RST4
Panel main EEPROM	Blue 15	Main EEPROM

Special LED Patterns

Panel	MR
PD (2-15) B R	PD (1) B R O
SD (1-15) B R	SD (7-15) B R O
System failure B R	Standalone operation (MRMS01) B R O
MR on standby (Red LED lit)	Rewriting of softwa (PC) B R O
Rewriting of software (PC) B R	Rewriting of softwa (USB) B R O
NO BACKUP B R	After rewriting is completed successfully, the orange LED goes dark.
For special patterns other than described here, see 5.1[1].	Rewriting of software failed (USB) B R O

Commands for shifting between standalone and system operations

Panel	MR
To Standalone operation: SYSS00	To Standalone operation: MRMS01
To System operation: SYSS01	To System operation: MRMS00

Note: After issuing a command, unplug then again plug in the AC power cord.

Subcategory confirmation procedure

If the DISPLAY key is pressed during shutdown, the orange LED flashes. (MR only)

SD	SD Subcategory	
8	1	Tuner 1
	2	MSP/MAP
	3	AV Switch
	4	RGB Switch
	5	Main VDEC
	6	VDEC-SDRAM
	7	AD/PLL
	8	HDMI
	9	Display Port Tx
13	1	RST2
	2	RST4

Other SD main categories have subcategories.
For details, see 5.4[2].

How to locate several items on the Factory menu

{ } : Item on the Factory menu
[ ] : Key on the remote control unit
" " : Screen indication

1. Confirmation of accumulated power-on time and power-on count
Select {INFORMATION} then {HOUR METER}.
(After entering Factory mode, press [⬇] four times.)

2. Confirmation of the Power-down and Shutdown histories

① **Panel system**
PD: Select {PANEL FACTORY} then {POWER DOWN}.
(After entering Factory mode, press [MUTING] once, press [ENTER/SET], then press [⬇] two times.)
SD: Select {PANEL FACTORY} then {SHUT DOWN}.
(After entering Factory mode, press [MUTING] once, press [ENTER/SET], then press [⬇] three times.)

② **MR section**
Select {INFORMATION} then {MAIN NG}.
(After entering Factory mode, press [⬇] two times.)

③ **Panel main section**
Select {PANEL MAIN FACTORY} then {PM NG INFO}.
After entering Factory mode, press [MUTING] twice, then press [ENTER/SET].

3. How to display the Mask indication

① **Mask indication in the panel side**
1. Select {PANEL FACTORY} then {RASTER MASK SETUP}.
(After entering Factory mode, press [MUTING] once, press [ENTER/SET], then press [⬇] 8 times.)
2. Press [ENTER/SET], then select a Mask indication, using [⬆] or [⬇].

Adjustments and Settings after replacement of the Assys (Procedures in Factory mode)

1. DIGITAL Assy (Panel): Transfer of backup data
① Select {PANEL FACTORY}, {ETC}, then {BACKUP DATA}. (After entering Factory mode, press [MUTING] once, press [ENTER/SET], press [⬇] seven times, then press [ENTER/SET].)
② Select {TRANSFER}, using [➡], then hold [ENTER/SET] pressed for at least 5 seconds.
③ After transfer of backup data is completed, {ETC} is automatically selected, and the LED on the front panel returns to normal lighting.

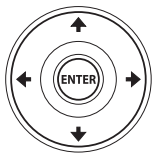
2. MAIN BLOCK Assy (MR), MAIN Assy (Panel): Execution of FINAL SETUP.
① Select {INITIALIZE} then {FINAL SETUP}, then press [ENTER/SET]. (After entering Factory mode, press [MUTING] three times, then press [⬇] four times.)
② Select "YES", using [➡]. Then hold [ENTER/SET] pressed for at least 5 seconds.
③ After "FINAL SETUP IS COMPLETE" is displayed on the screen, turn the POWER switch of the main unit off.

3. POWER SUPPLY Unit (Panel): Clearance of the accumulated power-on count and maximum temperature value
① Select {PANEL FACTORY}, {ETC}, then {P COUNT INFO}. (After entering Factory mode, press [MUTING] once, press [ENTER/SET], press [⬇] seven times, press [ENTER/SET], then press [⬇] six times.)
② Press [➡] to select "CLEAR". Hold [ENTER/SET] pressed for at least 5 seconds. After clearance is completed, "ETC" is automatically selected. Clear the maximum temperature value (MAX TEMP) in the same manner.

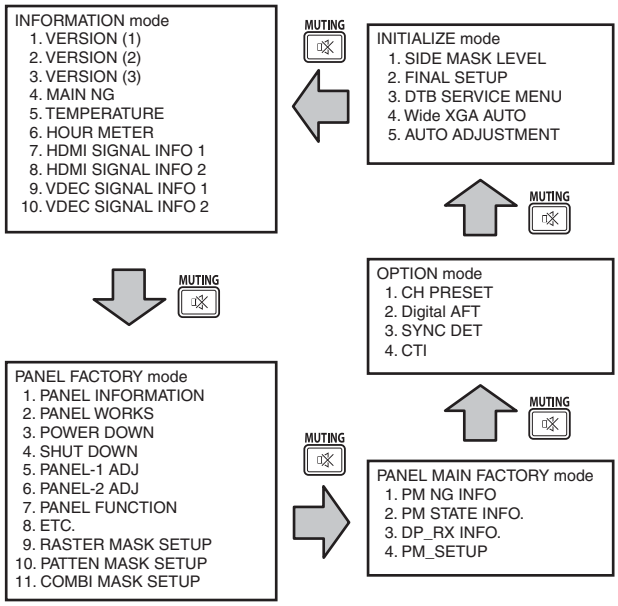
4. Other Assys (panel): Clearance of the maximum temperature value
① Select {PANEL FACTORY}, {ETC}, then {MAX TEMP}. (After entering Factory mode, press [MUTING] once, press [ENTER], press [⬇] seven times, press [ENTER/SET], then press [⬇] seven times.)
② Press [➡] to select "CLEAR". Hold [ENTER/SET] pressed for at least 5 seconds. After clearance is completed, "ETC" is automatically selected.

Quick Reference upon Service Visit ②
Mode transition and structure of layers in Service Factory mode

Mode transition in Service Factory mode



- To shift to another mode, press [MUTING].
- To shift to another item in a specific mode, press [⬆] or [⬇].
- To shift to the next nested layer below for an item with a "(+)" indication, press [ENTER/SET]. To return to the next nested layer above, also press [ENTER/SET].



Structure of Layers in Service Factory Mode

INFORMATION mode	
├ 1. VERSION (1)	The software versions for each microcomputer
├ 2. VERSION (2)	The Flash memory versions for each device
├ 3. VERSION (3)	The software versions for display microcomputer
├ 4. MAIN NG	The shutdown message ID/event times
│	(Going Clear mode by [ENTER/SET] key)
│ └ 4-1. CLEAR	Select Yes by [➡] key ➡ pushing and hold [ENTER/SET] key
├ 5. TEMPERATURE	The temperature/FAN rotating status
├ 6. HOUR METER	The HOUR METER/P-COUNT information
├ 7. HDMI SIGNAL INFO 1	The information of HDMI information files
├ 8. HDMI SIGNAL INFO 2	The information of HDMI information files
├ 9. VDEC SIGNAL INFO 1	The signal information of VDEC
├ 10. VDEC SIGNAL INFO 2	The signal information of VDEC
PANEL FACTORY mode	Refer to [PANEL FACTORY MODE]
PANEL MAIN FACTORY mode	
├ 1. PM NG INFO.	Shutdown history of the panel main
├ 2. PM STATE INFO.	The temperature/FAN rotating status/Room Light Sensor
├ 3. DP_RX INFO.	Indication of the DPRx ID
├ 4. PM_SETUP	Select the bezel color and clear the shutdown history of the panel main
OPTION mode	
├ 1. CH PRESET	For production line use
├ 2. Digital AFT	For production line use
├ 3. SYNC DET	For technical analysis
├ 4. CTI	For technical analysis
INITIALIZE mode	
├ 1. SIDE MASK LEVEL	For factory use
│ └ 1-1. SIDE MASK LEVEL	
├ 2. FINAL SETUP	Set to Factory default settings (it should perform after replacing a MAIN Assy)
│ └ 2-1. DATA RESET	
├ 3. DTB SERVICE MODE	Information for the Digital Tuner Service Menu is displayed
│ └ 3-1. MODE SHIFT	
├ 4. Wide XGA AUTO	For technical analysis
└ 5. AUTO ADJUSTMENT	

Structure of Layers in Panel Factory Mode 1

1. PANEL INFORMATION	Version indication of the panel
2. PANEL WORKS	Indications of the accumulated power-on time and power-on count of the panel
3. POWER DOWN	Indication of the Power-down history
4. SHUT DOWN	Indication of the Shutdown history
5. PANEL-1 ADJ (+)	
1. VOL SUS	Settings required after replacement of the panel
2. VOL OFFSET	
• • • • •	
10. RESET1ST_KSB	Items for factory use
• • • • •	
25. SUS FREQ	For AM noise prevention (Depending on the mode, brightness of the screen changes.) For confirmation of the result of the setting change, the unit must be turned off then back on again.
6. PANEL-2 ADJ (+)	
1. R-HIGH	For the WB adjustment of the panel and ABL adjustment. A setting table is available for each signal frequency.
2. G-HIGH	
• • • • •	
6. B-LOW	
7. ABL	
7. PANEL FUNCTION (+)	
1. R-LEVEL	Items for factory use
• • • • •	

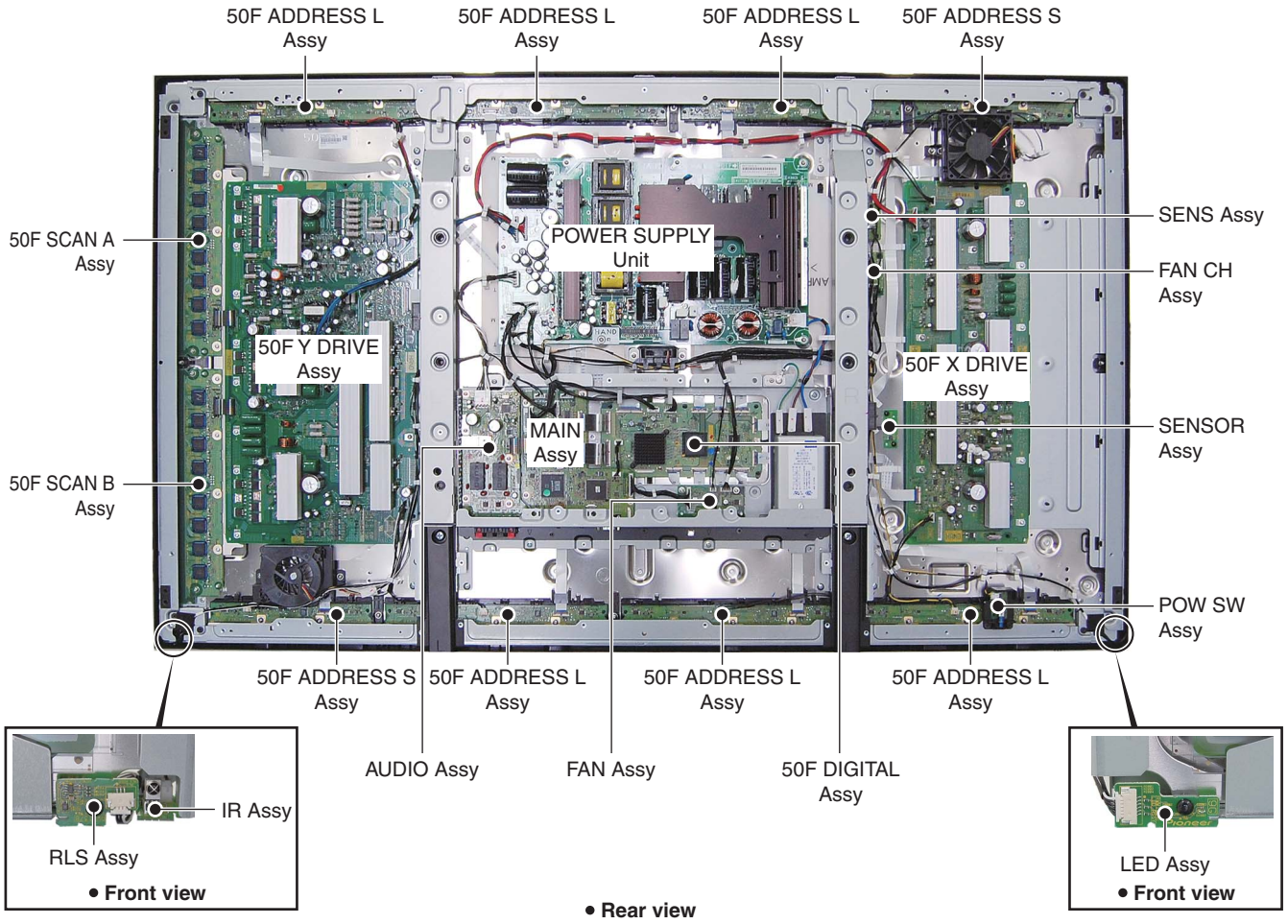
To "Structure of Layers in Panel Factory Mode 2"

Structure of Layers in Panel Factory Mode 2

8. ETC (+)	
1. BACKUP DATA	For transferring backup data (after replacement of the DIGITAL Assy)
2. DIGITAL EEPROM	Change the adjustment status of the DIGITAL Assy.
3. PD INFO.	For clearance of data for the corresponding items. The clearing method is the same: Select "CLEAR", then hold [ENTER/SET] pressed for at least 5 seconds.
4. SD INFO.	
5. HR-MTR INFO.	
6. PM/B1-B5	
7. P COUNT INFO.	
8. MAX TEMP.	
9. MIRROR	Switch the Mirror display mode.
10. CLS	Switch the function when checking the color sensor level.
9. RASTER MASK SETUP (+)	
1. MASK OFF	For use while the Raster Mask is displayed. Use [⬆] or [⬇] to select the type of mask. Use [➡] or [⬅] to select the sequence.
2. RST MASK 01	
• • • • •	
10. PATTERN MASK SETUP (+)	
1. MASK OFF	For use while the Pattern Mask is displayed. Use [⬆] or [⬇] to select the type of mask. Use [➡] or [⬅] to select the sequence.
2. PTN MASK 01	
• • • • •	
11. COMBI MASK SETUP (+)	
1. MASK OFF	For use while the Combination Mask is displayed. Use [⬆] or [⬇] to select the type of mask. Use [➡] or [⬅] to select the sequence.
2. CMB MASK 01	
• • • • •	

3.3 PCB LOCATIONS

Note: The wiring shown in the photo is different from the actual wiring, because the product in the photo is a prototype. Upon servicing, be sure to restore the original wiring of the unit after repair work.



NOTES: ● *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
● *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

LIST OF ASSEMBLIES

Mark	No.	Description	Part No.
(PDP Panel)			
NSP		50F ADDRESS L ASSY	AWW1348
NSP		50F ADDRESS S ASSY	AWW1349
NSP		50F SCAN A ASSY	AWW1350
		└ IC2801 - IC2808	AN16184A
NSP		50F SCAN B ASSY	AWW1351
		└ IC2901 - IC2908	AN16184A
		SENSOR ASSY	AWW1340
		50F DIGITAL Assy	AWW1368
		50F X DRIVE ASSY	AWV2599
		50F Y DRIVE ASSY	AWV2600

Mark	No.	Description	Part No.
(MTB)			
		MAIN ASSY	AWW1393
		FAN ASSY	AWW1394
		POW SW ASSY	AWW1395
		SENS ASSY	AWW1396
		FAN CH ASSY	AWW1397
		AUDIO ASSY	AWW1398
		LED ASSY	AWW1399
		IR ASSY	AWW1400
		RLS ASSY	AWW1401
(Power Supply)			
⚠		POWER SUPPLY UNIT	AXY1203
(Service Assy)			
		PDP SERVICE ASSY	AWU1378

A

B

C

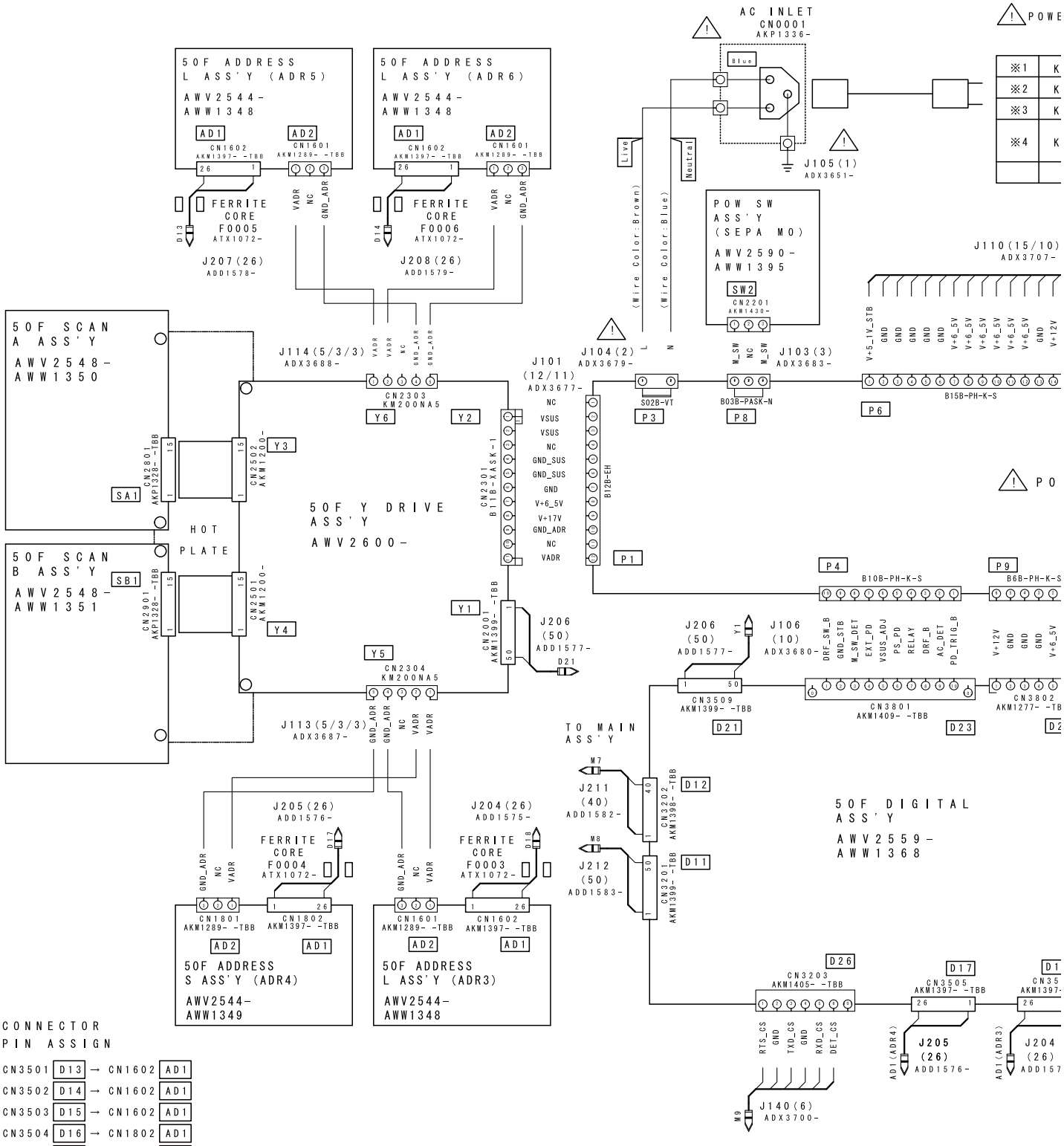
D

E

F

4. BLOCK DIAGRAM

4.1 OVERALL WIRING DIAGRAM (1/2)



CONNECTOR PIN ASSIGN

CN3501	D13	→ CN1602	AD1
CN3502	D14	→ CN1602	AD1
CN3503	D15	→ CN1602	AD1
CN3504	D16	→ CN1802	AD1
CN3505	D17	→ CN1802	AD1
CN3506	D18	→ CN1602	AD1
CN3507	D19	→ CN1602	AD1
CN3508	D20	→ CN1602	AD1

1→26. V+10V	14→13. CLKN		
2→25. V+10V	15→12. CLKP		
3→24. GND	16→11. GND		
4→23. GND	17→10. DN		
5→22. AN	18→ 9. DP		
6→21. AP	19→ 8. GND		
7→20. GND	20→ 7. GND		
8→19. BN	21→ 6. V+3_3V		
9→18. BP	22→ 5. V+3_3V		
10→17. GND	23→ 4. V+3_3V		
11→16. GN	24→ 3. GND		
12→15. CP	25→ 2. LS1		
13→14. GND	26→ 1. ADR_PD		

CN2501 Y4 ↓ CN2901 SB1

1. VH	
2. VH	
3. NC	
4. NC	
5. GNDH_VH	
6. GNDH_VH	
7. SI	
8. GNDH_DIG	
9. CLK_L	
10. LE	
11. OC1	
12. OC2	
13. CLR	
14. GNDH_RL	
15. IC5V	

CN2502 Y3 ↓ CN2801 SA1

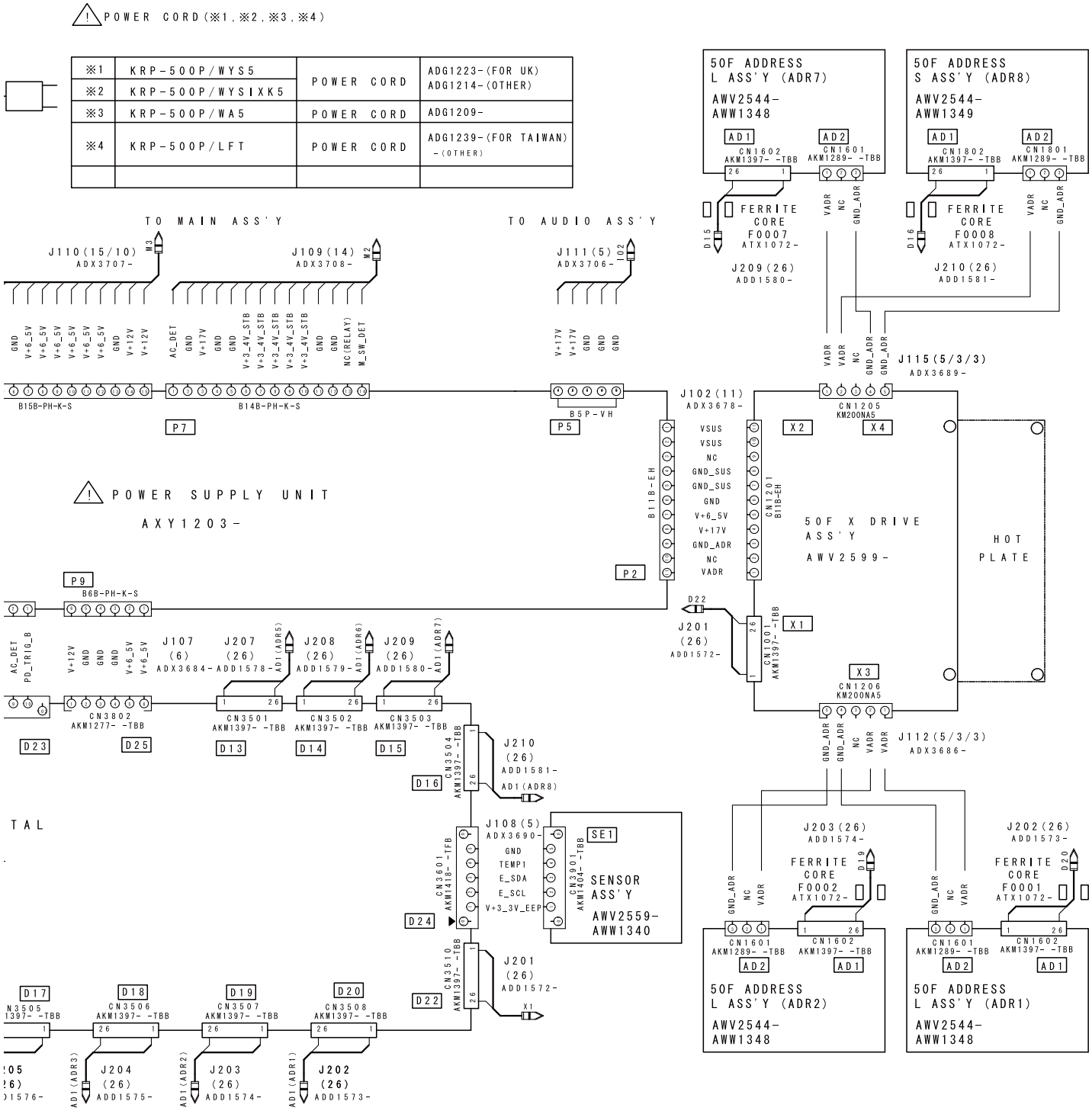
1. VH	
2. VH	
3. NC	
4. NC	
5. GNDH_VH	
6. GNDH_VH	
7. CLK_H	
8. GNDH_DIG	
9. LE	
10. OC1	
11. OC2	
12. CLR	
13. SI	
14. GNDH_RH	
15. IC5V	

CN3509 D21 → CN2001 Y1

1→50. YCN_PD	18→33. SUS_MUTE	35→16. YRSV4	
2→49. VYPRST_ADJ	19→32. YSNOFS	36→15. SI	
3→48. SCAN_PD	20→31. GND	37→14. CLK_H	
4→47. GND	21→30. YRST-D	38→13. GND	
5→46. YDD_PD	22→29. YSUS_LMSK	39→12. LE	
6→45. VOFS_ADJ	23→28. YSUS_HMSK	40→11. OC1	
7→44. YSUS_PD	24→27. GND	41→10. OC2	
8→43. GND	25→26. YSUS_D	42→ 9. CLR	
9→42. YRSV1	26→25. YPR-U	43→ 8. GND	
10→41. YRSV2	27→24. YSUS_G	44→ 7. VKNOFS4_ADJ	
11→40. GND	28→23. GND	45→ 6. VKNOFS3_ADJ	
12→39. YKNOFS4	29→22. YSUS_U	46→ 5. VKNOFS1_2_ADJ	
13→38. YKNOFS3	30→21. YRSV3	47→ 4. GND	
14→37. YKNOFS2	31→20. YSUS_B	48→ 3. SCN5V_PD	
15→36. YKNOFS1	32→19. ESW	49→ 2. YDRV_PD(GND)	
16→35. GND	33→18. GND	50→ 1. PSW2	
17→34. YSOFT-G	34→17. CLK_L		

CN3201 D11 → CN4002 M8

1→50. V+3_4V_ACT2	18→33. R8_EVN	35→16. G2_	
2→49. NC	19→32. R7_EVN	36→15. G1_	
3→48. GND	20→31. R6_EVN	37→14. GO_	
4→47. MULTI_OE	21→30. R5_EVN	38→13. GND	
5→46. RELAY2	22→29. R4_EVN	39→12. B9_	
6→45. REQ_MD	23→28. R3_EVN	40→11. B8_	
7→44. RXD_MD	24→27. R2_EVN	41→10. B7_	
8→43. TXD_MD	25→26. R1_EVN	42→ 9. B6_	
9→42. GND	26→25. RO_EVN	43→ 8. B5_	
10→41. THEATER	27→24. GND	44→ 7. B4_	
11→40. VD	28→23. G9_EVN	45→ 6. B3_	
12→39. HD	29→22. G8_EVN	46→ 5. B2_	
13→38. DE	30→21. G7_EVN	47→ 4. B1_	
14→37. GND	31→20. G6_EVN	48→ 3. BO_	
15→36. CLK	32→19. G5_EVN	49→ 2. GND	
16→35. GND	33→18. G4_EVN	50→ 1. MOD	
17→34. R9_EVN	34→17. G3_EVN		



- When ordering service parts, be sure to refer to “EXPLODED VIEWS and PARTS LIST” or “PCB PARTS LIST”.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

CN3202 D12 → CN4001 M7

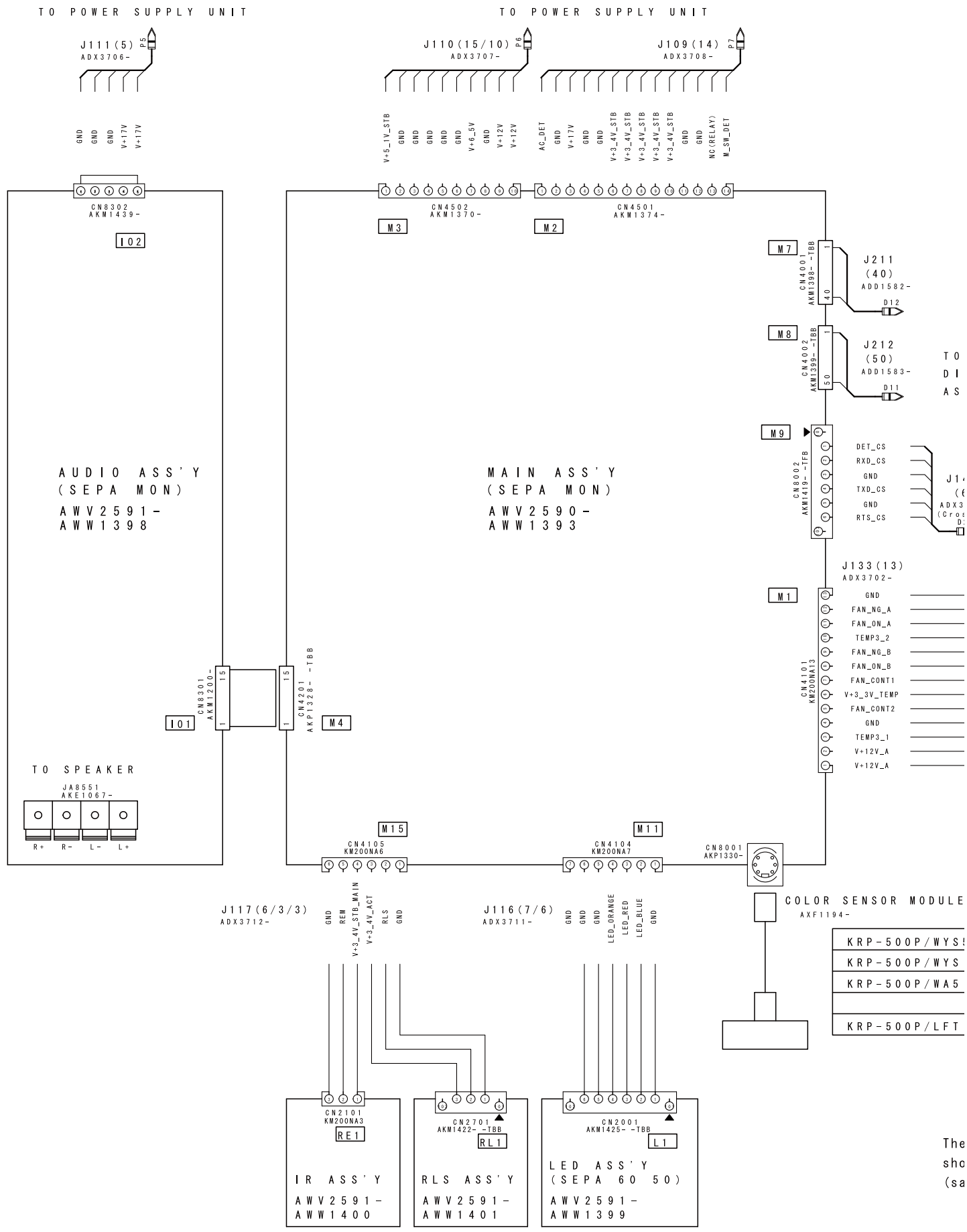
1→40. MODE_B	11→30. R3_ODD	21→20. G4_ODD	31→10. B5_ODD
2→39. SQ_SEL	12→29. R2_ODD	22→19. G3_ODD	32→ 9. B4_ODD
3→38. GND	13→28. R1_ODD	23→18. G2_ODD	33→ 8. B3_ODD
4→37. GND	14→27. R0_ODD	24→17. G1_ODD	34→ 7. B2_ODD
5→36. R9_ODD	15→26. GND	25→16. G0_ODD	35→ 6. B1_ODD
6→35. R8_ODD	16→25. G9_ODD	26→15. GND	36→ 5. B0_ODD
7→34. R7_ODD	17→24. G8_ODD	27→14. B9_ODD	37→ 4. GND
8→33. R6_ODD	18→23. G7_ODD	28→13. B8_ODD	38→ 3. GND
9→32. R5_ODD	19→22. G6_ODD	29→12. B7_ODD	39→ 2. GND
10→31. R4_ODD	20→21. G5_ODD	30→11. B6_ODD	40→ 1. MODE_C

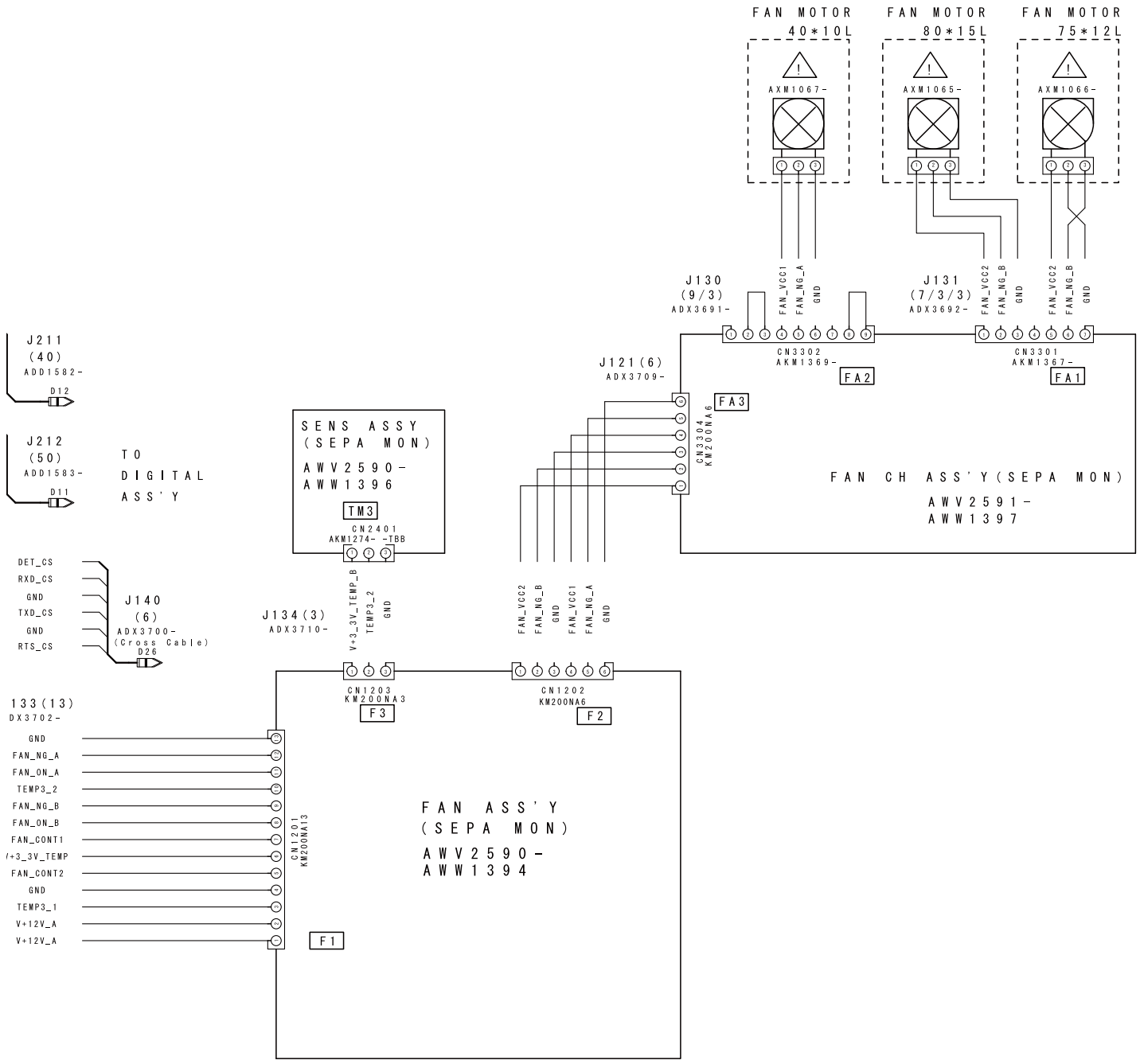
CN3510 D22 → CN1001 X1

1→26. XSUS_B	14→13. GND	
2→25. GND	15→12. XSOFT_D	
3→24. XSUS_U	16→11. GND	
4→23. GND	17→10. SUS_MUTE	
5→22. XSUS_D	18→ 9. GND	
6→21. GND	19→ 8. XKOFS1_ADJ	
7→20. XSUS_G	20→ 7. XKOFS2_ADJ	
8→19. GND	21→ 6. GND	
9→18. XPRST	22→ 5. XDD_PD	
10→17. GND	23→ 4. PSW2	
11→16. XKOFS1	24→ 3. XRSV1	
12→15. GND	25→ 2. Psize	
13→14. XKOFS2	26→ 1. XSUS_PD	

OVERALL DIAGRAM
KRP-500P

4.2 OVERALL WIRING DIAGRAM (2/2)





ENSOR MODULE

KRP-500P/WYS5	Attached
KRP-500P/WYSIXK5	
KRP-500P/WA5	Optional
KRP-500P/LFT	

CONNECTOR PIN ASSIGN

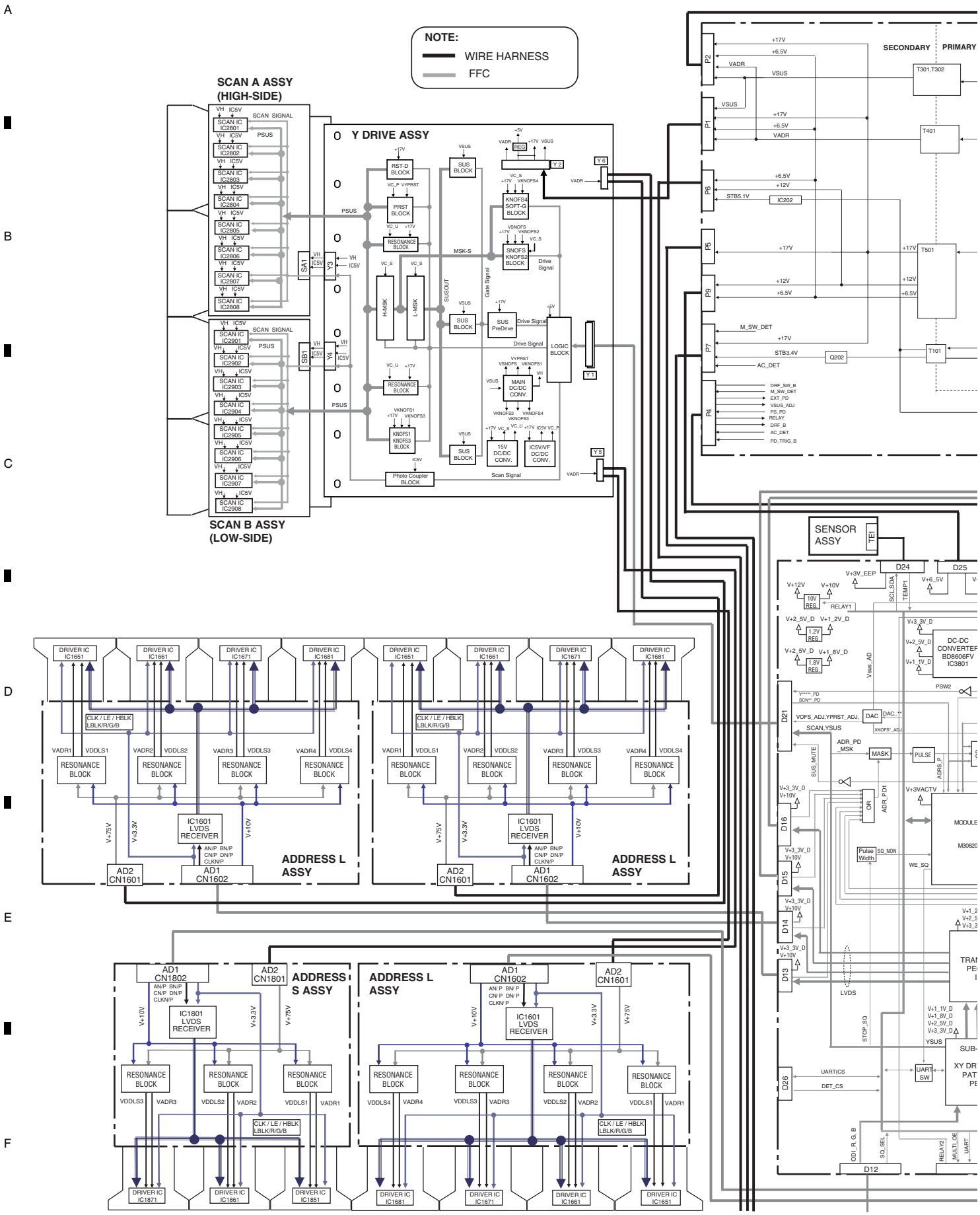
CN4201 M4 → CN8301 I01

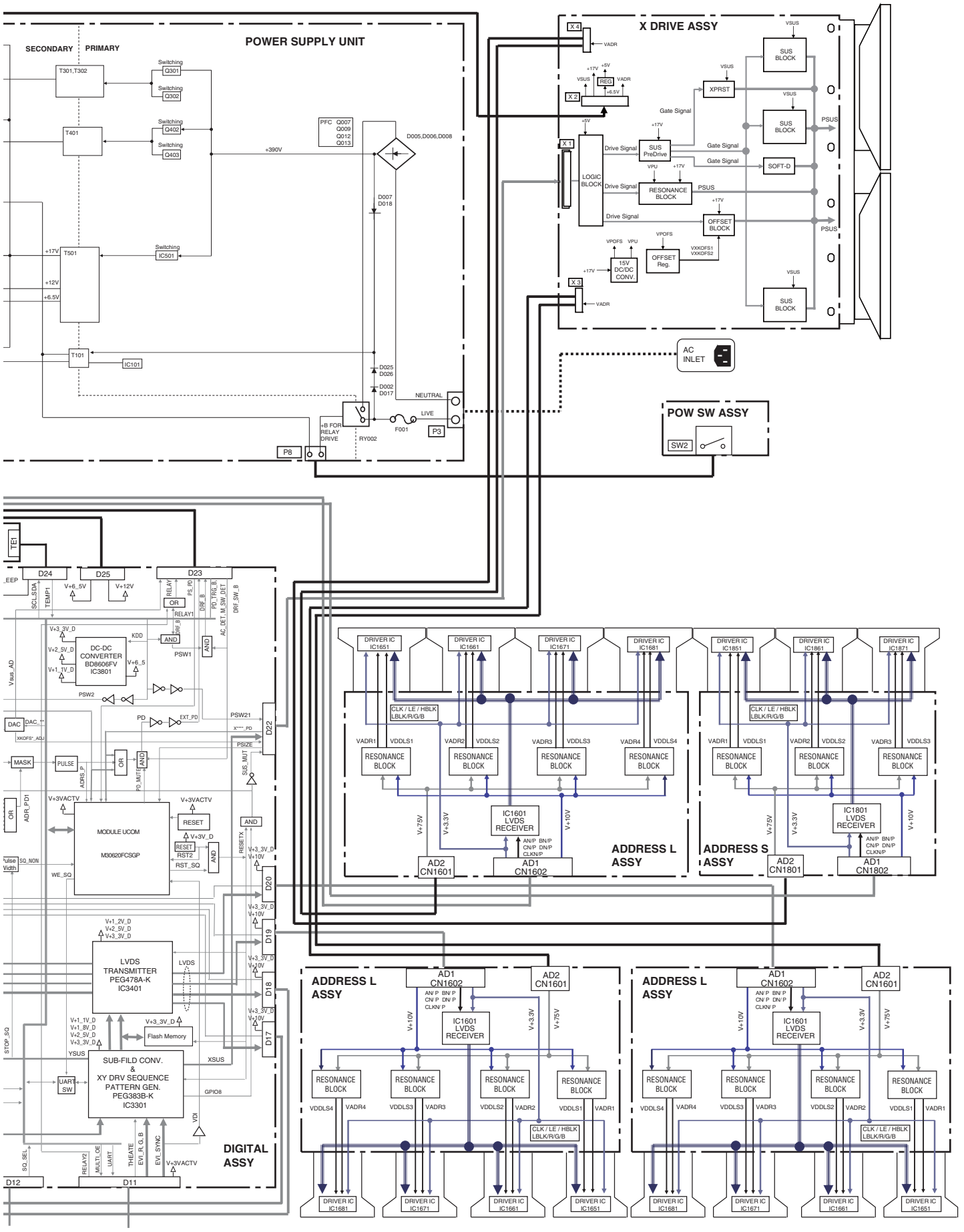
1. V+6_5V	9. AC_A_MUTE
2. GND	10. A_NG_B
3. MCLK	11. OTW
4. GND	12. PDN
5. LRCK	13. SDA_AV
6. SCLK	14. SCL_AV
7. SDIN	15. GND
8. RST_5504	

The ⚠ mark found on some component parts
should be replaced with same parts
(safety regulation authorized) of identical designation.

OVERALL DIAGRAM
KRP-500P

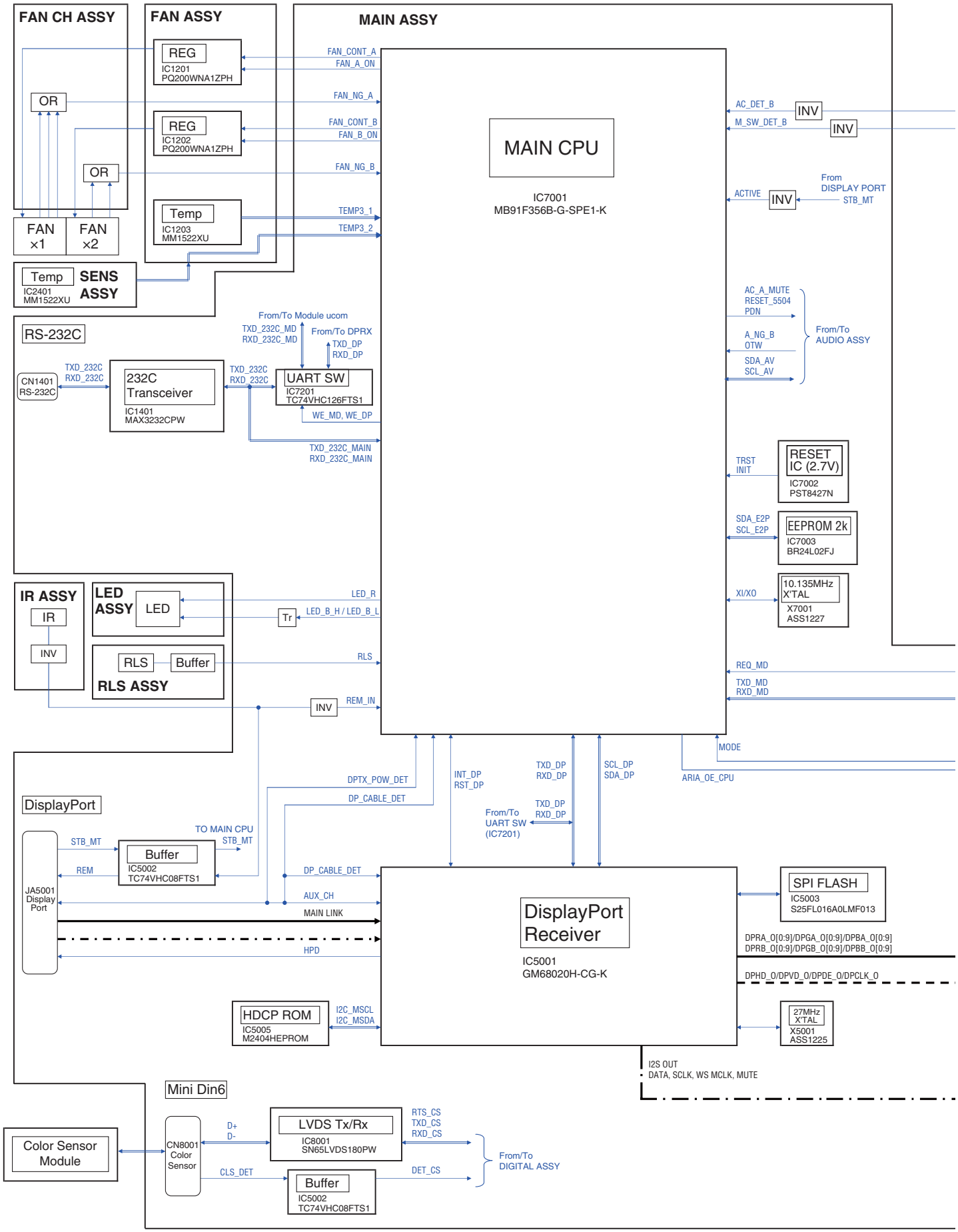
4.3 OVERALL BLOCK DIAGRAM (1/2)

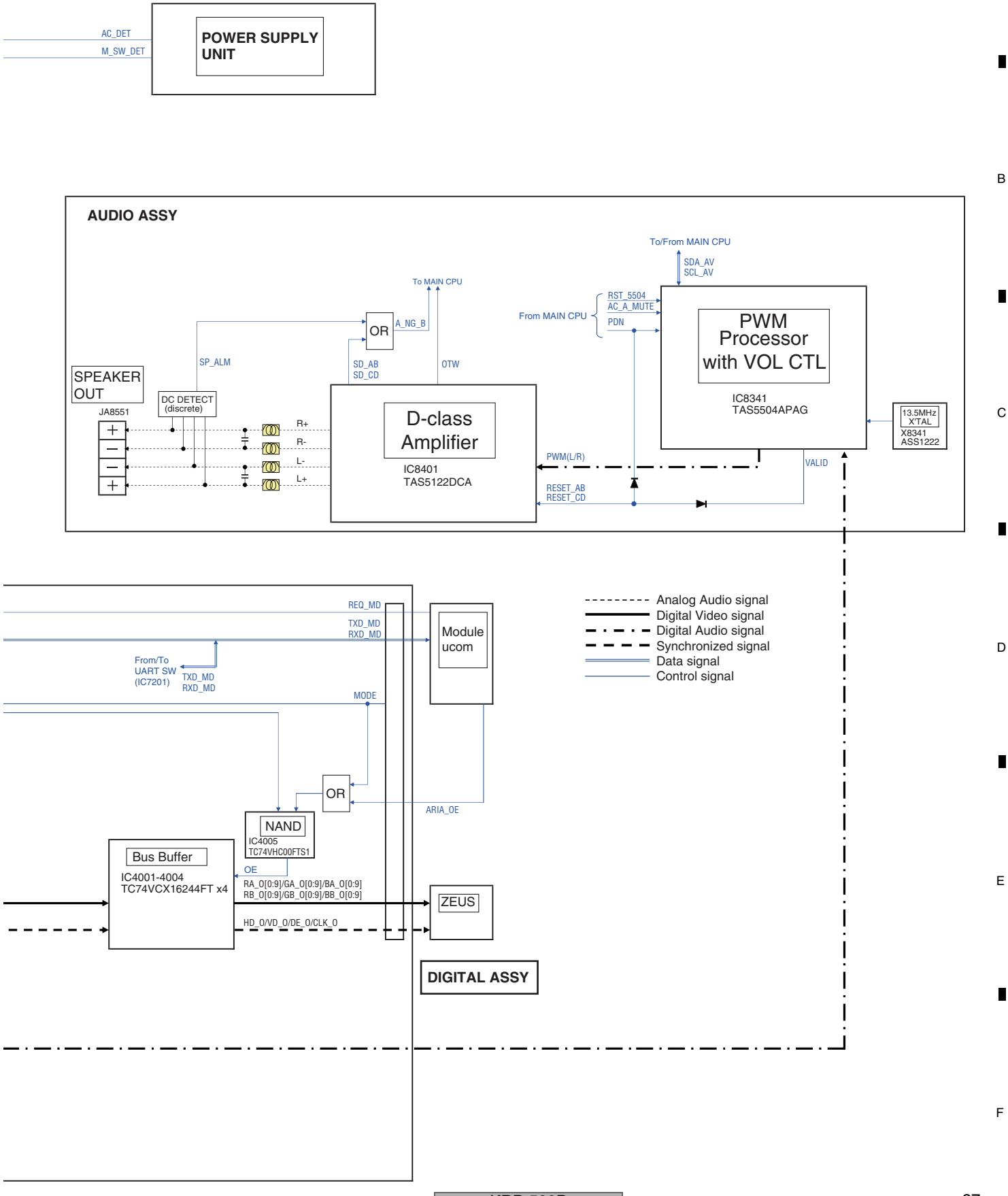



POWER SUPPLY UNIT
SECONDARY
PRIMARY
T301,T302
T401
T501
T101
IC101
IC501
Switching
Q301
Q302
Q402
Q403
PFC Q007 Q009 Q012 Q013
D005,D006,D008
D007 D018
D025 D026
D002 D017
+390V
+17V
+12V
+6.5V
NEUTRAL
LIVE
F001
RY002
+B FOR RELAY DRIVE
P3
P8
X DRIVE ASSY
X 1
X 2
X 3
X 4
VADR
VSUS
REG
+6.5V
XPRST
SUS BLOCK
SUS PreDrive
LOGIC BLOCK
Drive Signal
Gate Signal
SOFT-D
RESONANCE BLOCK
PSUS
OFFSET BLOCK
VPU
VPOFS
OFFSET Reg.
VXKOFS1
VXKOFS2
15V DC/DC CONV.
AC INLET
POW SW ASSY
SW2
TEI
DIGITAL ASSY
MODULE UCOM
M30620FCSGP
LVDS TRANSMITTER PEG478A-K IC3401
SUB-FILD CONV. & XY DRV SEQUENCE PATTERN GEN. PEG383B-K IC3301
Flash Memory
DC-DC CONVERTER BD8606FV IC3801
ADDRESS L ASSY
ADDRESS S ASSY
DRIVER IC IC1651
DRIVER IC IC1661
DRIVER IC IC1671
DRIVER IC IC1681
DRIVER IC IC1851
DRIVER IC IC1861
DRIVER IC IC1871
CLK / LE / HBLK LBLK/R/G/B
RESONANCE BLOCK
IC1601 LVDS RECEIVER
IC1801 LVDS RECEIVER
AD1 CN1602
AD2 CN1601
AD1 CN1802
AD2 CN1801
D22
D20
D19
D18
D17
D12
D11
D23
D24
D25

KRP-500P

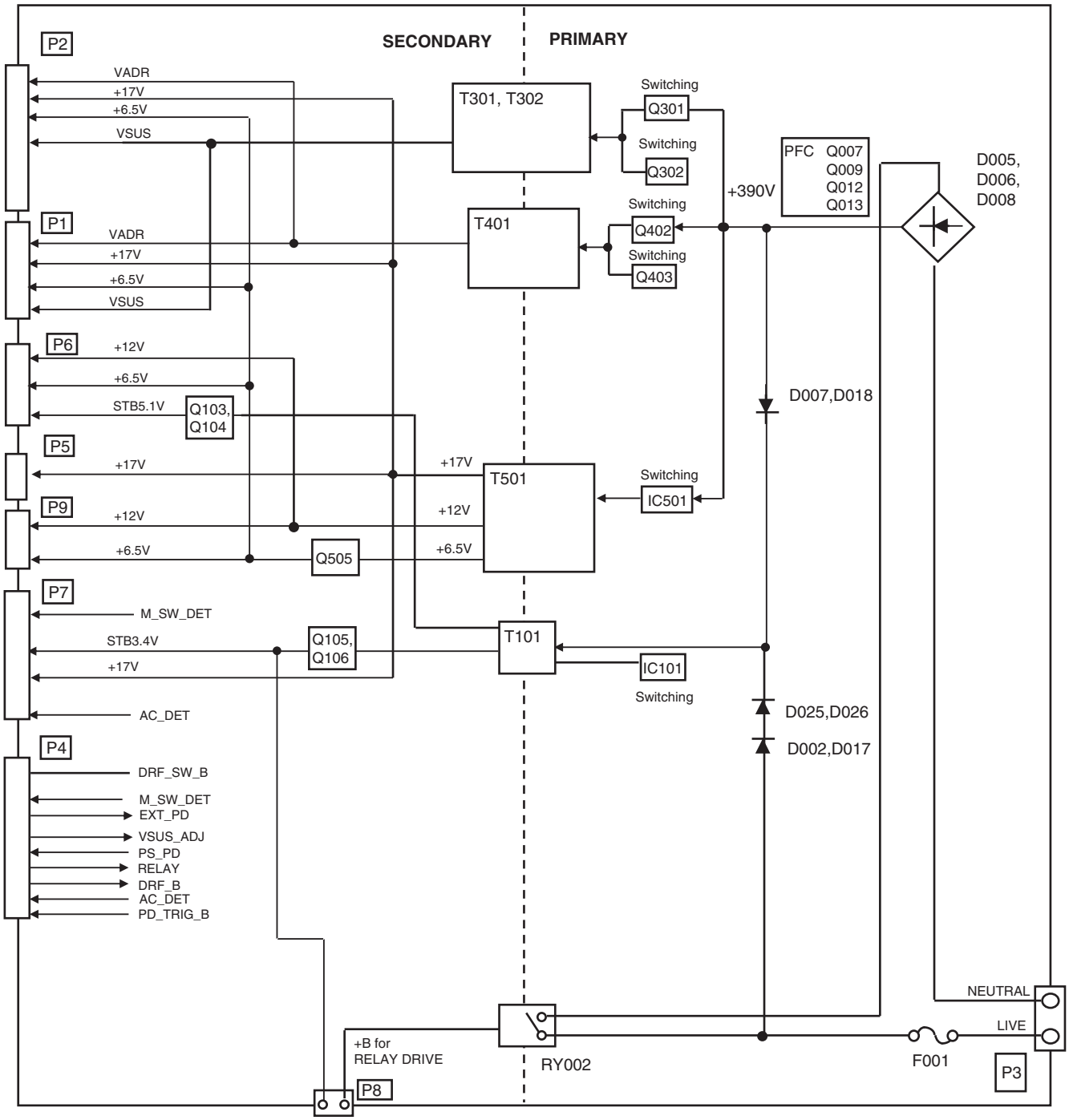
4.4 OVERALL BLOCK DIAGRAM (2/2)



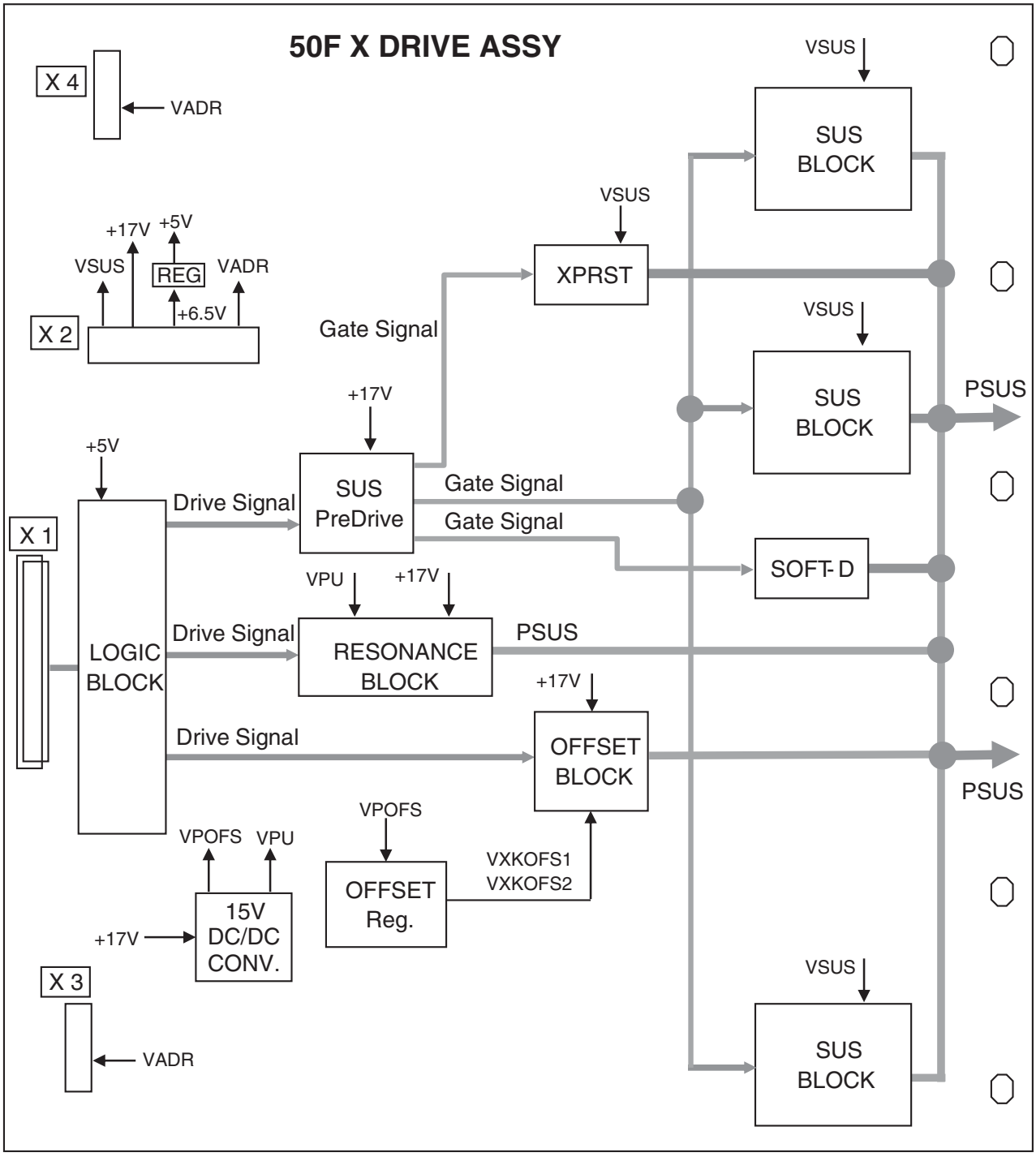

AC_DET
M_SW_DET
POWER SUPPLY UNIT
AUDIO ASSY
To/From MAIN CPU
SDA_AV
SCL_AV
To MAIN CPU
From MAIN CPU
RST_5504
AC_A_MUTE
PDN
PWM Processor with VOL CTL
IC8341
TAS5504APAG
13.5MHz X'TAL
X8341
ASS1222
OR
A_NG_B
SP_ALM
SD_AB
SD_CD
OTW
SPEAKER OUT
DC DETECT (discrete)
JA8551
R+
R-
L-
L+
D-class Amplifier
IC8401
TAS5122DCA
PWM(L/R)
VALID
RESET_AB
RESET_CD
REQ_MD
TXD_MD
RXD_MD
Module ucom
From/To UART SW (IC7201)
TXD_MD
RXD_MD
MODE
OR
ARIA_OE
NAND
IC4005
TC74VHC00FTS1
Bus Buffer
IC4001-4004
TC74VCX16244FT x4
OE
RA_O[0:9]/GA_O[0:9]/BA_O[0:9]
RB_O[0:9]/GB_O[0:9]/BB_O[0:9]
HD_O/VD_O/DE_O/CLK_O
ZEUS
DIGITAL ASSY
Analog Audio signal
Digital Video signal
Digital Audio signal
Synchronized signal
Data signal
Control signal

4.5 POWER SUPPLY UNIT

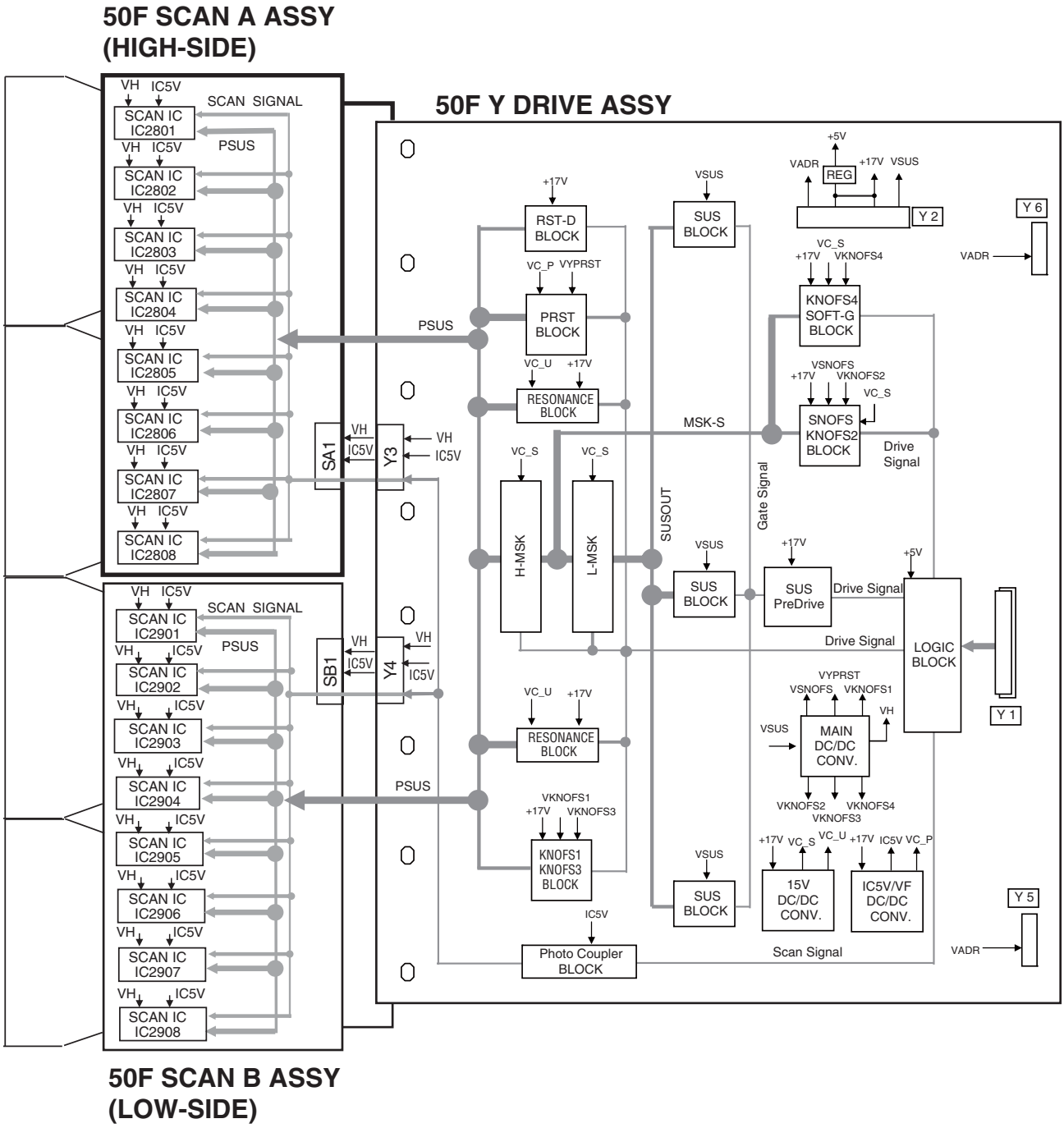
POWER SUPPLY UNIT



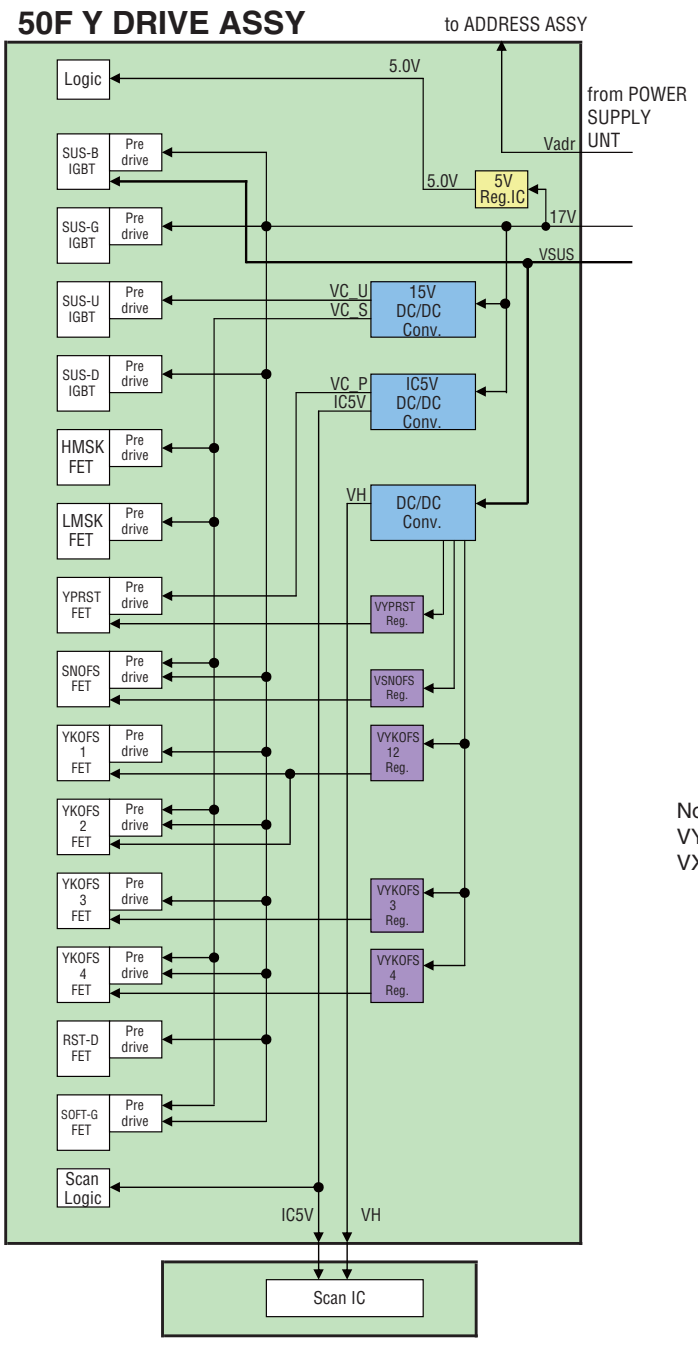
4.6 50F X DRIVE ASSY



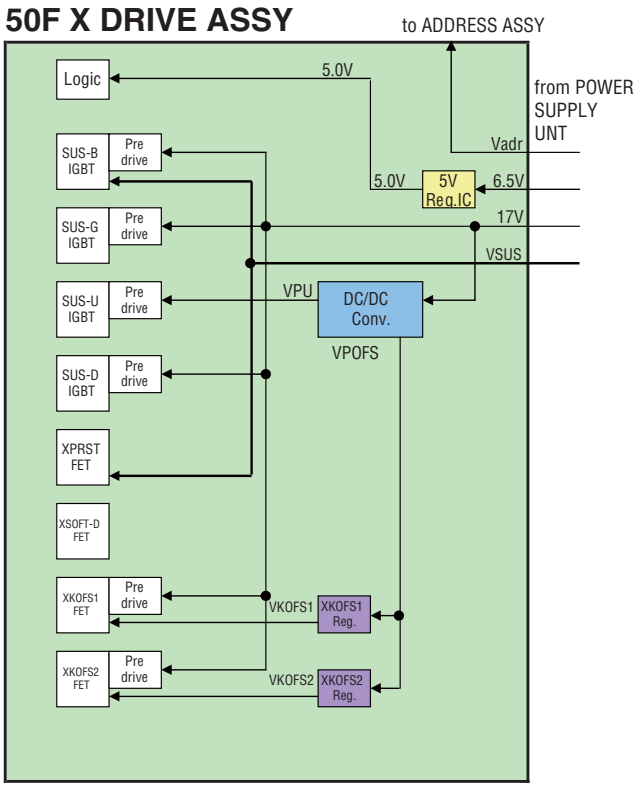
4.7 50F Y DRIVE, 50F SCAN A and B ASSYS



4.8 POWER SUPPLY BLOCK of 50F X, Y DRIVE and 50F SCAN A and B ASSYS



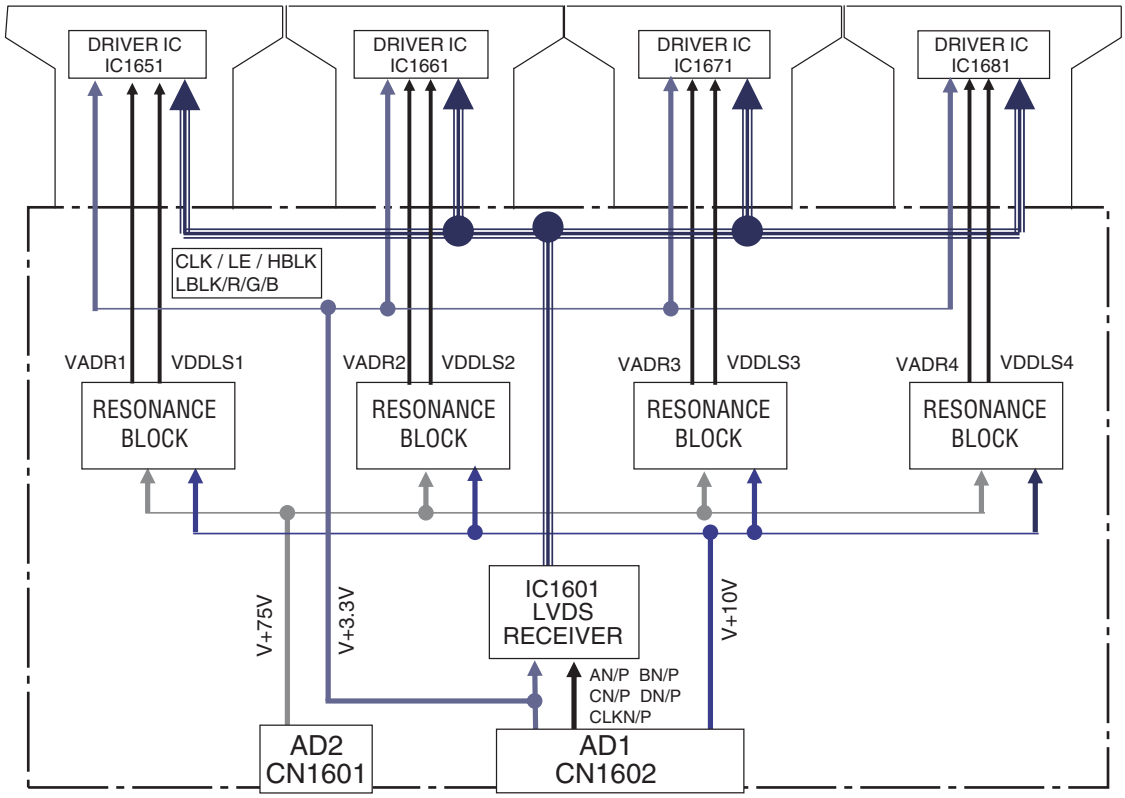
50F SCAN A, B ASSYS



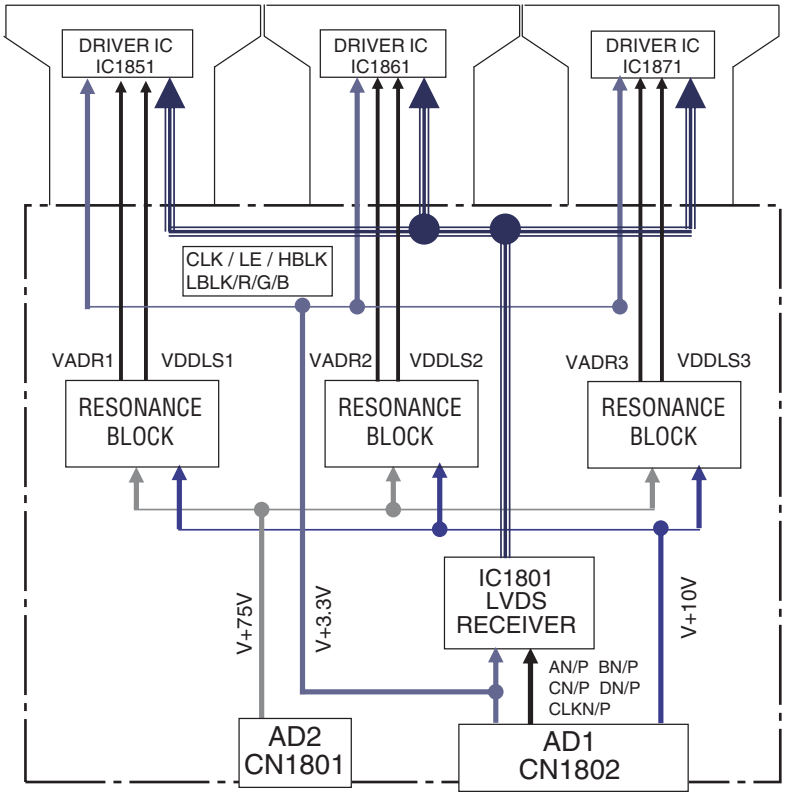
Note:
VYPRST, VSNOFS, VYKOFS12, VYKOFS3, VYKOFS4
VXKOFS1 and VXKOFS2 voltages are electrical volume controls.

4.9 50F ADDRESS L and S ASSYS

50F ADDRESS L ASSY

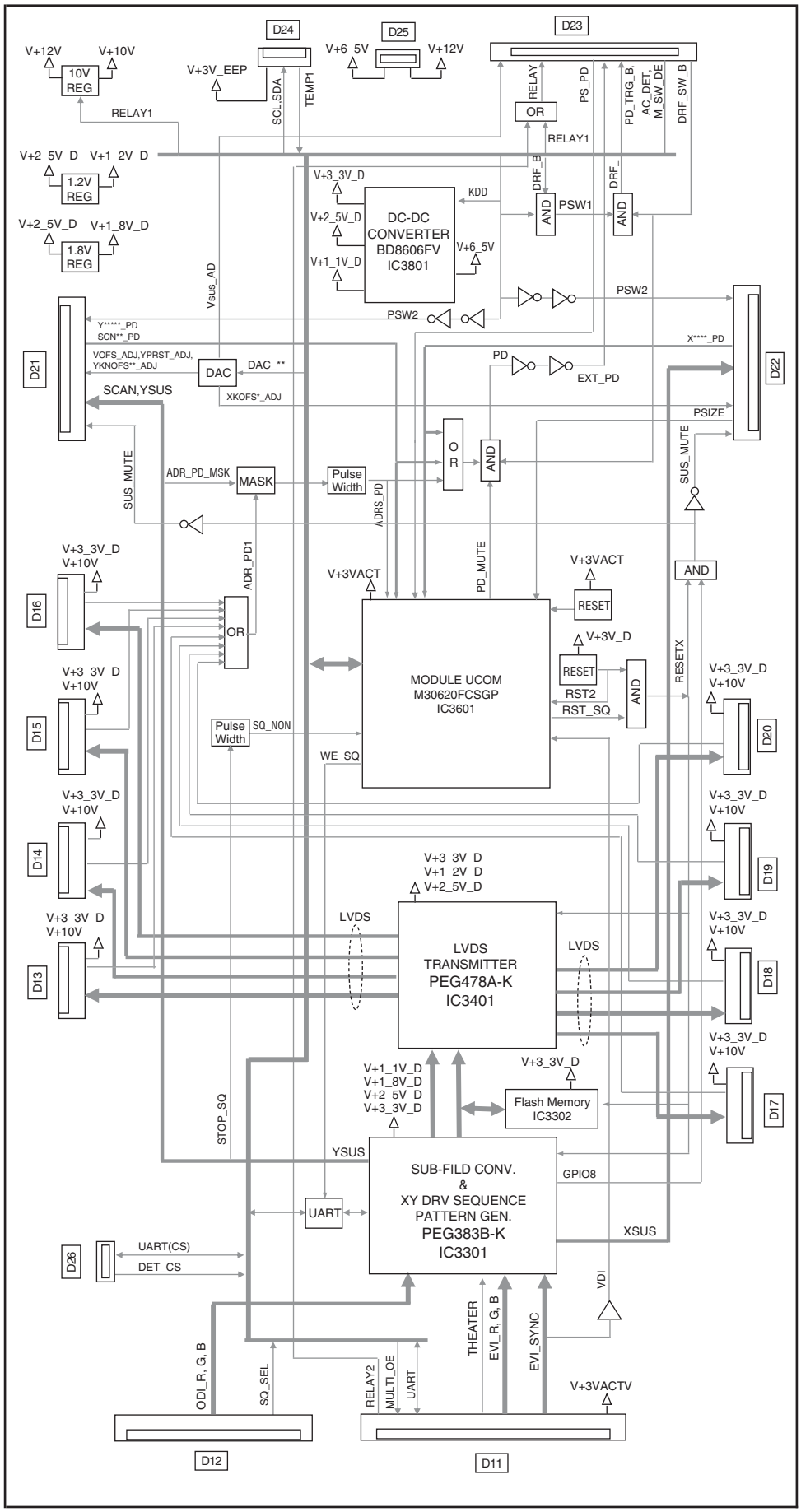


50F ADDRESS S ASSY



4.10 50F DIGITAL ASSY

50F DIGITAL ASSY



4.11 POWER SUPPLY BLOCK of MAIN and AUDIO ASSYS

5. DIAGNOSIS
5.1 POWER SUPPLY OPERATION

[1] LED DISPLAY INFORMATION

■ LED Pattern

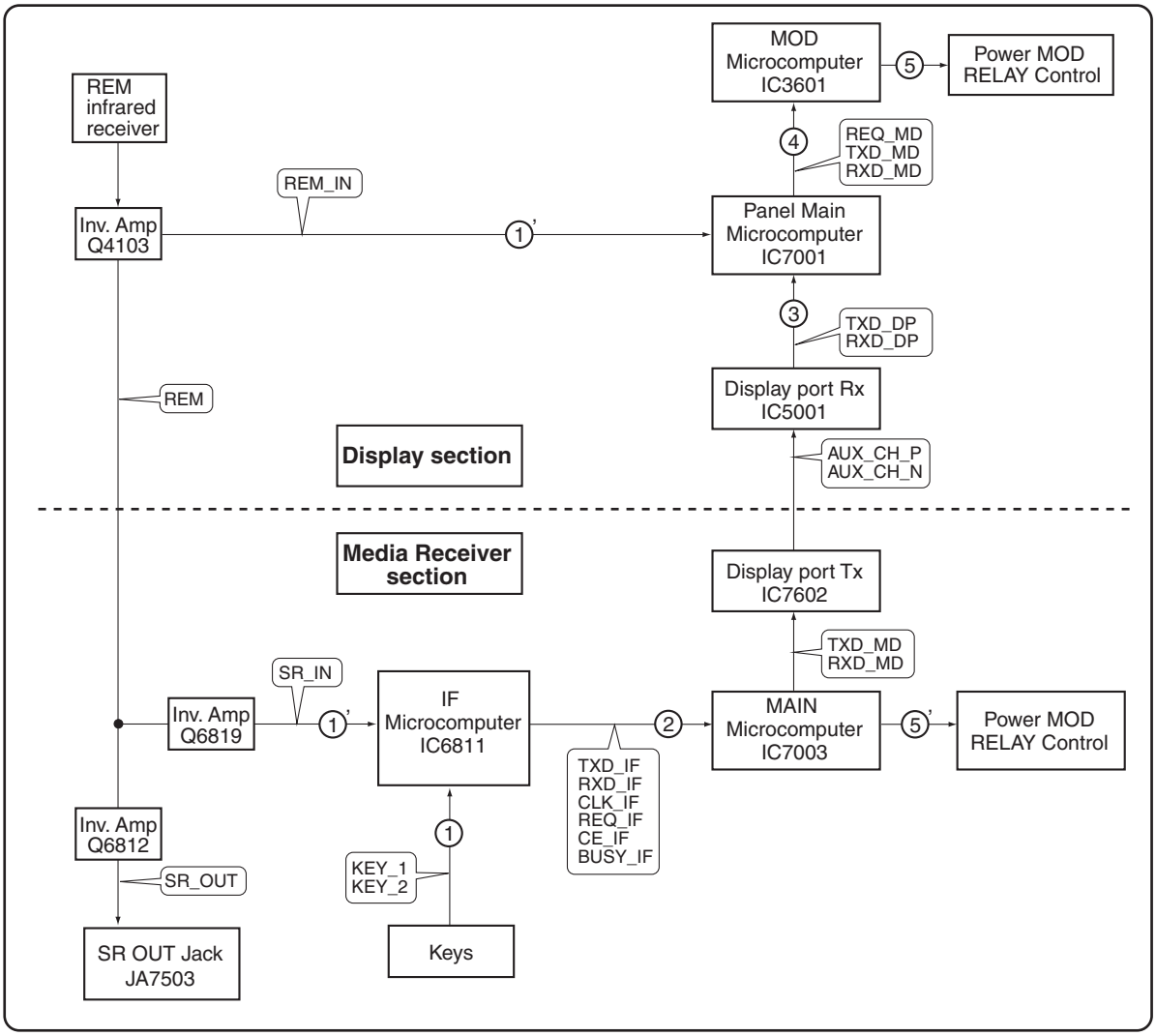
Status	LED Display Pattern	Remarks
AC-OFF /Main PowerOFF	Blue / Red	
Standby	Blue / Red	
Power ON	Blue / Red	
Abnormality in system connection	Blue: 1000ms / Red: 1000ms	
Power down	Blue: Once, Twice, n times, 2.5s, Once / Red: 500ms	*1
Shutdown	Blue: 500ms / Red: Once, Twice, n times, 2.5s, Once	*2
No digital adjustment data copied for backup	Blue: 200ms / Red	
During download (panel main)	Blue: 100ms, 300ms / Red: 100ms	
During download (excepting panel main)	Blue: 100ms / Red: 100ms	*3

*1: This LED only flashes when power-down is generated in the display unit.
When power-down is generated in the MR, the LED on the MR flashes.

*2: This LED only flashes when shutdown is generated in the display unit.
When shutdown is generated in the MR, the LED on the MR flashes.

*3: These LEDs only flash during rewriting of software in the display unit.
During rewriting of software in the MR, the LEDs on the MR flash.

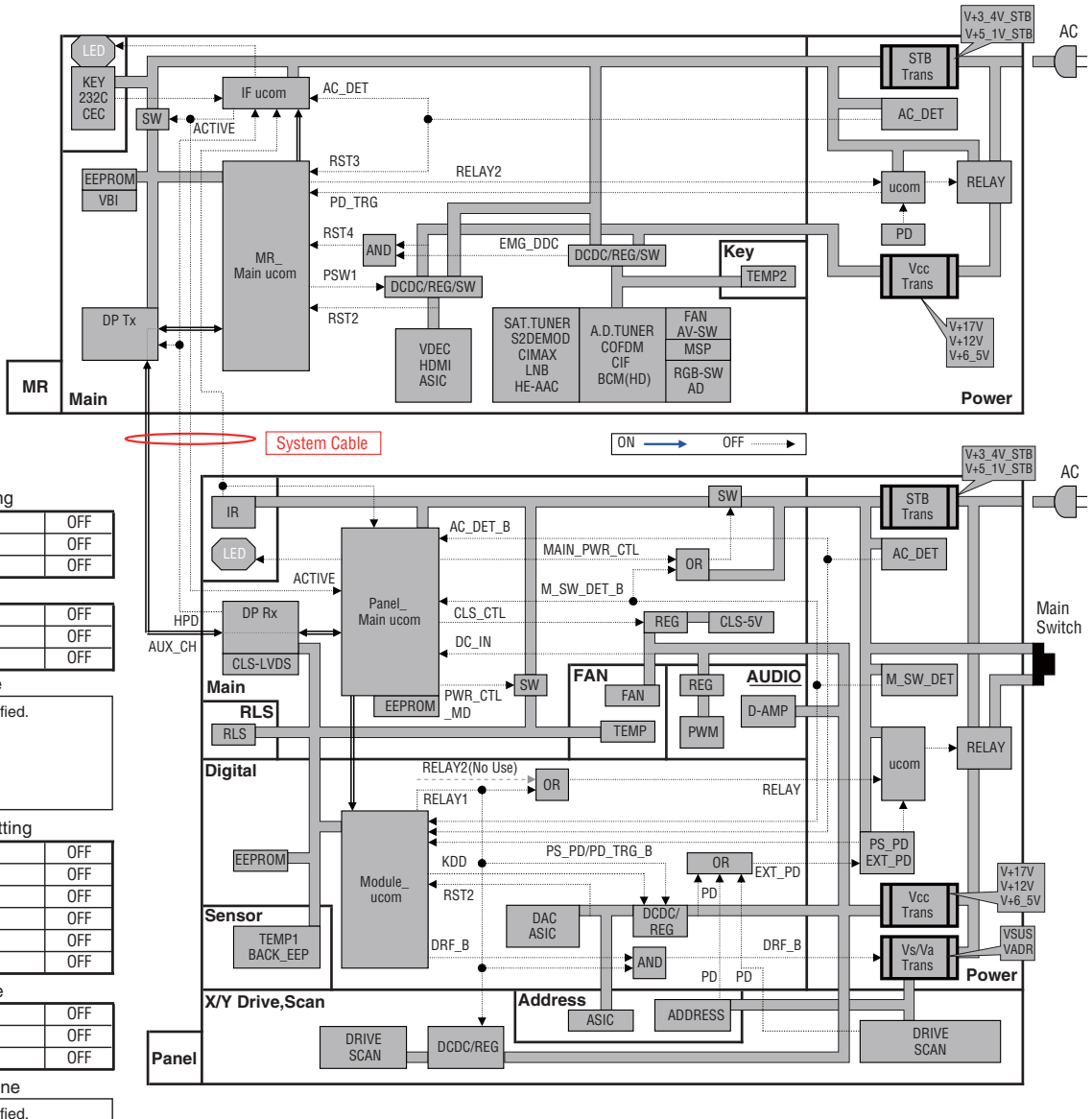
[2] POWER ON SEQUENCE



① : The KEY signal is input to the IF microcomputer.
①' : The remote control signal is input to the IF microcomputer and Panel main microcomputer.
② : The IF microcomputer sends the operation data of the remote control unit key to the main microcomputer.
③ : The main microcomputer issues a startup command (PON) to the panel main microcomputer through DP Tx and DP Rx.
④ : The panel main microcomputer issues a startup command (PON) to the MOD microcomputer.
⑤ : The MOD microcomputer controls a MOD relay of the POWER SUPPLY Unit (Display section), then the power is turned on.
⑤' : The main microcomputer controls a MOD relay of the POWER SUPPLY Unit (Media Receiver section), then the power is turned on.

[3] DETAILS OF POWER ON SEQUENCE

AC-OFF



(MR) Output port setting

IF: ACTIVE	OFF
MR Main: RELAY2	OFF
MR Main: PSW1	OFF

(MR) Input port state

MR Main: RST4	OFF
MR Main: RST2	OFF
MR Main: PD_TRG	OFF

(MR) Operation outline

All devices are not electrified.

(Panel) Output port setting

Panel Main: MAIN_PWR_CTL	OFF
Panel Main: PWR_CTL_MD	OFF
Panel Main: CLS_CTL	OFF
DP Rx: HPD	OFF
Module: RELAY1 / KDD	OFF
Module: DRF_B	OFF

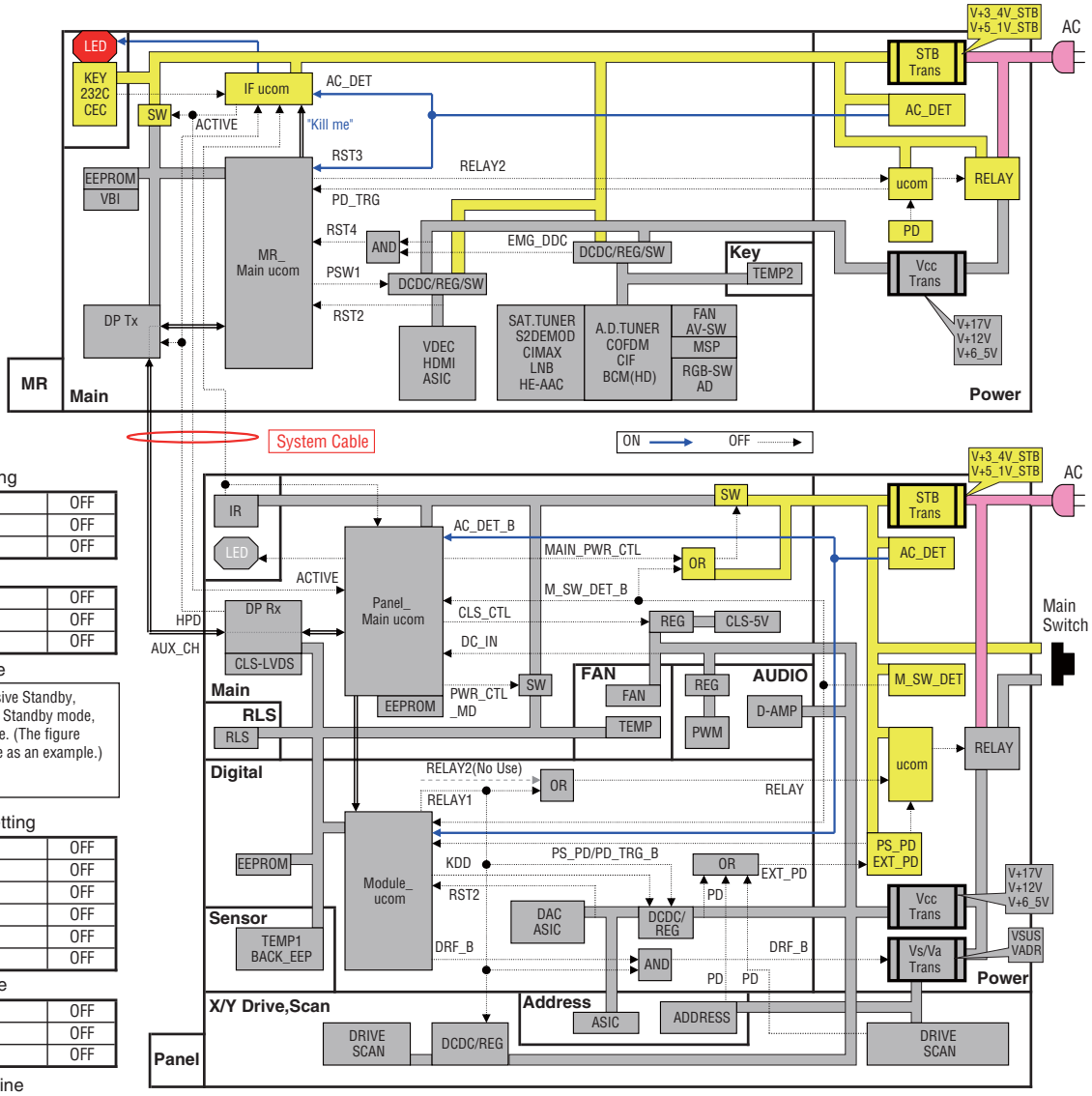
(Panel) Input port state

Main: DC_IN	OFF
Module: RST2	OFF
Module: PS_PD/PD_TRG_B	OFF

(Panel) Operation outline

All devices are not electrified.

Panel Main Power OFF



(MR) Output port setting

IF: ACTIVE	OFF
MR Main: RELAY2	OFF
MR Main: PSW1	OFF

(MR) Input port state

MR Main: RST4	OFF
MR Main: RST2	OFF
MR Main: PD_TRG	OFF

(MR) Operation outline

The unit will enter either Passive Standby, Active Standby, or Functional Standby mode, according to the circumstance. (The figure shows Passive Standby mode as an example.)

(Panel) Output port setting

Panel Main: MAIN_PWR_CTL	OFF
Panel Main: PWR_CTL_MD	OFF
Panel Main: CLS_CTL	OFF
DP Rx: HPD	OFF
Module: RELAY1 / KDD	OFF
Module: DRF_B	OFF

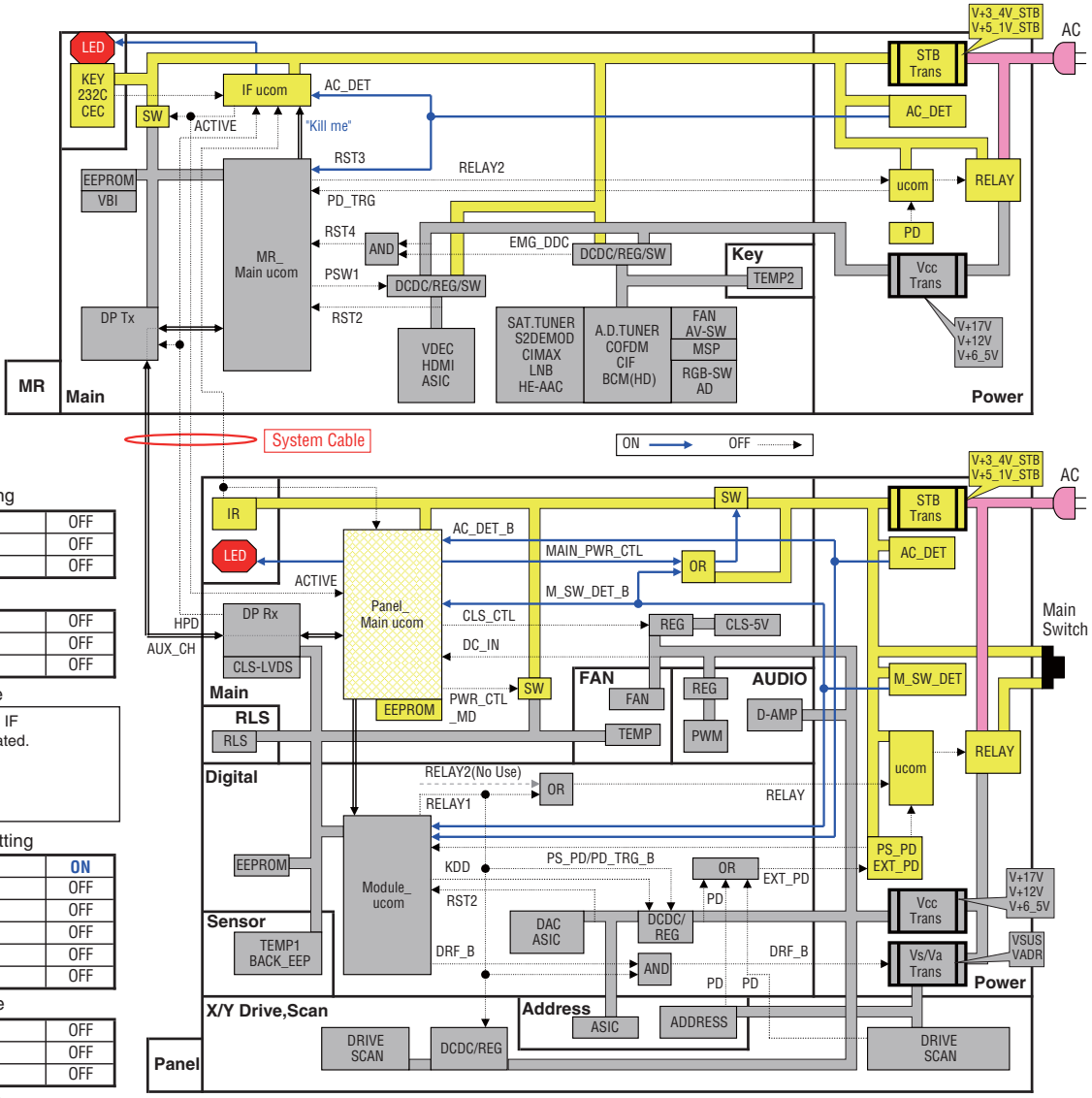
(Panel) Input port state

Main: DC_IN	OFF
Module: RST2	OFF
Module: PS_PD/PD_TRG_B	OFF

(Panel) Operation outline

Standby power is supplied from the Power Assy, but power to each device is interrupted.

Passive Standby



(MR) Output port setting

IF: ACTIVE	OFF
MR Main: RELAY2	OFF
MR Main: PSW1	OFF

(MR) Input port state

MR Main: RST4	OFF
MR Main: RST2	OFF
MR Main: PD_TRG	OFF

(MR) Operation outline

Only the periphery of the IF microcomputer are operated.

(Panel) Output port setting

Panel Main: MAIN_PWR_CTL	ON
Panel Main: PWR_CTL_MD	OFF
Panel Main: CLS_CTL	OFF
DP Rx: HPD	OFF
Module: RELAY1 / KDD	OFF
Module: DRF_B	OFF

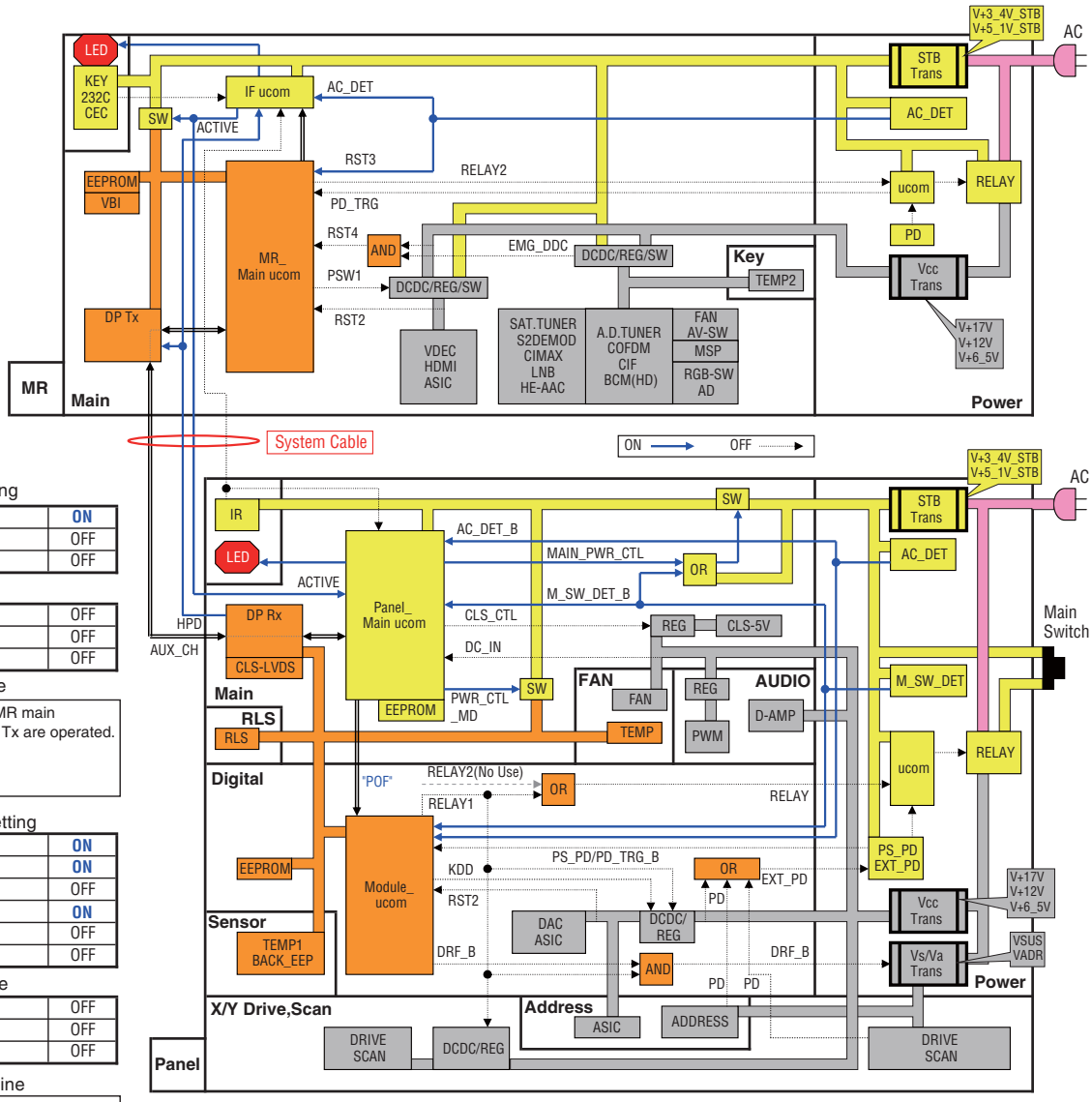
(Panel) Input port state

Main: DC_IN	OFF
Module: RST2	OFF
Module: PS_PD/PD_TRG_B	OFF

(Panel) Operation outline

Only the periphery of the Panel main microcomputer and IR are operated. In this time, panel main microcomputer is the sleep mode.

Active Standby



(MR) Output port setting

IF: ACTIVE	ON
MR Main: RELAY2	OFF
MR Main: PSW1	OFF

(MR) Input port state

MR Main: RST4	OFF
MR Main: RST2	OFF
MR Main: PD_TRG	OFF

(MR) Operation outline

Periphery of the IF and MR main microcomputers and DP Tx are operated.

(Panel) Output port setting

Panel Main: MAIN_PWR_CTL	ON
Panel Main: PWR_CTL_MD	ON
Panel Main: CLS_CTL	OFF
DP Rx: HPD	ON
Module: RELAY1 / KDD	OFF
Module: DRF_B	OFF

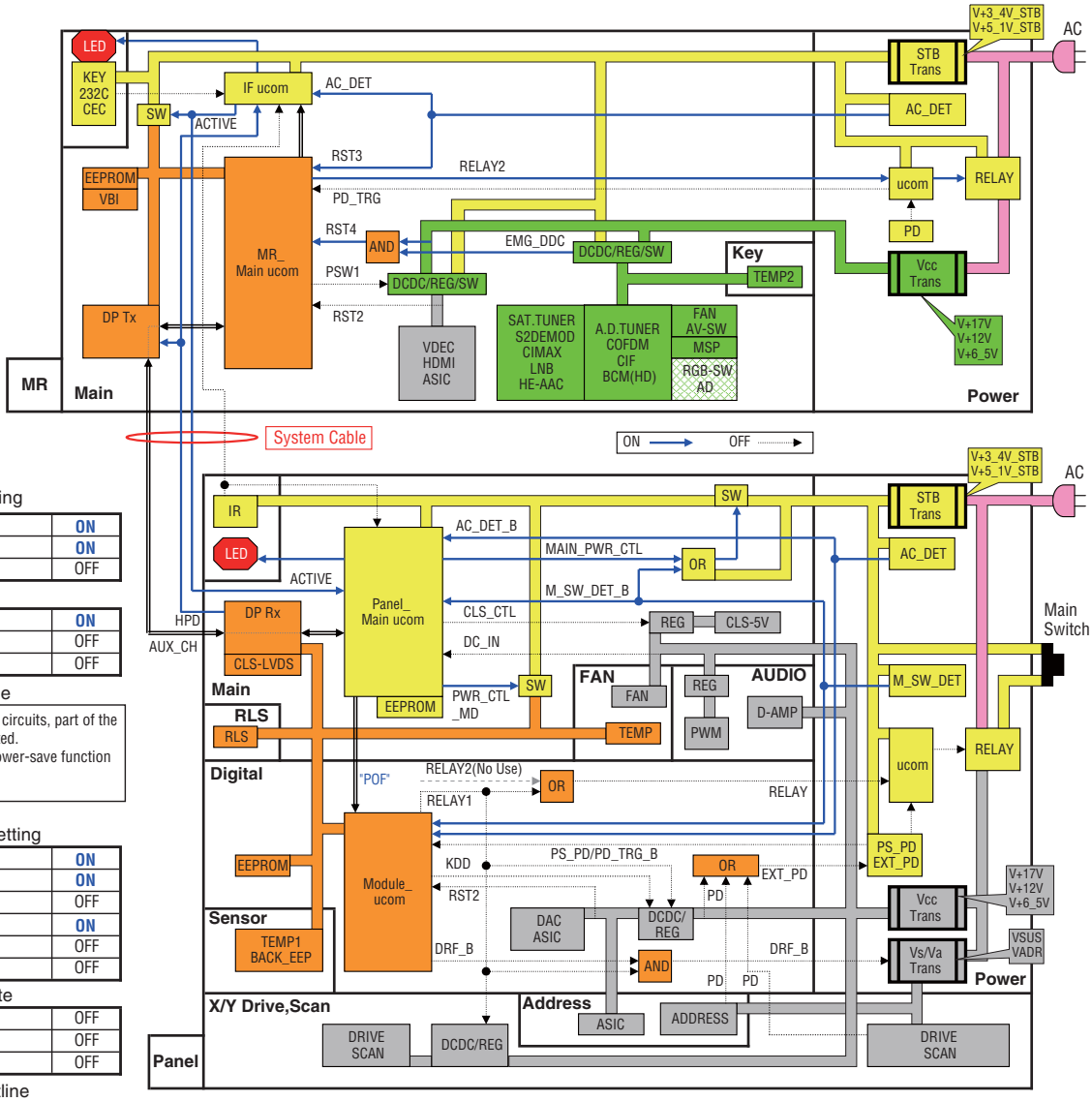
(Panel) Input port state

Main: DC_IN	OFF
Module: RST2	OFF
Module: PS_PD/PD_TRG_B	OFF

(Panel) Operation outline

Periphery of the Panel main microcomputer, IR, DP Rx and module microcomputer are operated.

Function Standby



(MR) Output port setting

IF: ACTIVE	ON
MR Main: RELAY2	ON
MR Main: PSW1	OFF

(MR) Input port state

MR Main: RST4	ON
MR Main: RST2	OFF
MR Main: PD_TRG	OFF

(MR) Operation outline

- Besides the standby power circuits, part of the Vcc circuits are also activated.
- RGB-SW/AD IC uses the power-save function of the IC.

(Panel) Output port setting

Panel Main: MAIN_PWR_CTL	ON
Panel Main: PWR_CTL_MD	ON
Panel Main: CLS_CTL	OFF
DP Rx: HPD	ON
Module: RELAY1 / KDD	OFF
Module: DRF_B	OFF

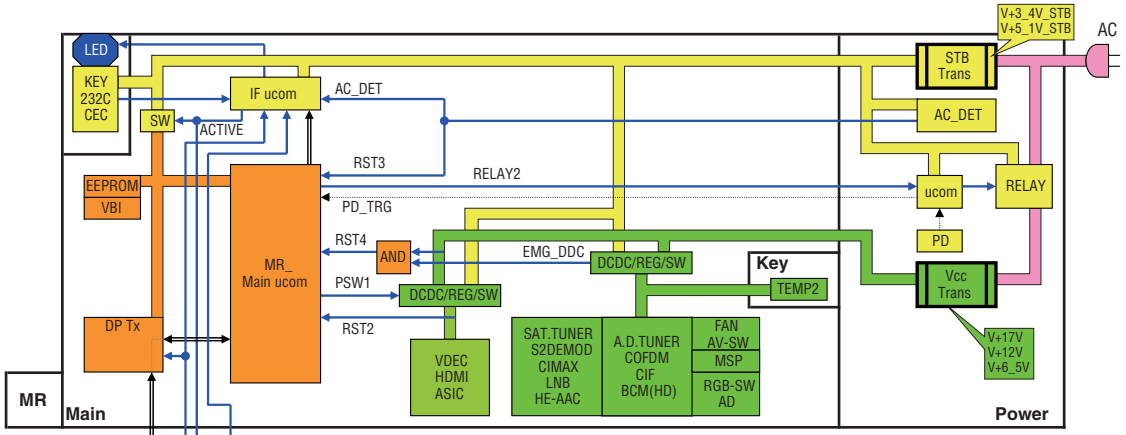
(Panel) Input port state

Main: DC_IN	OFF
Module: RST2	OFF
Module: PS_PD/PD_TRG_B	OFF

(Panel) Operation outline

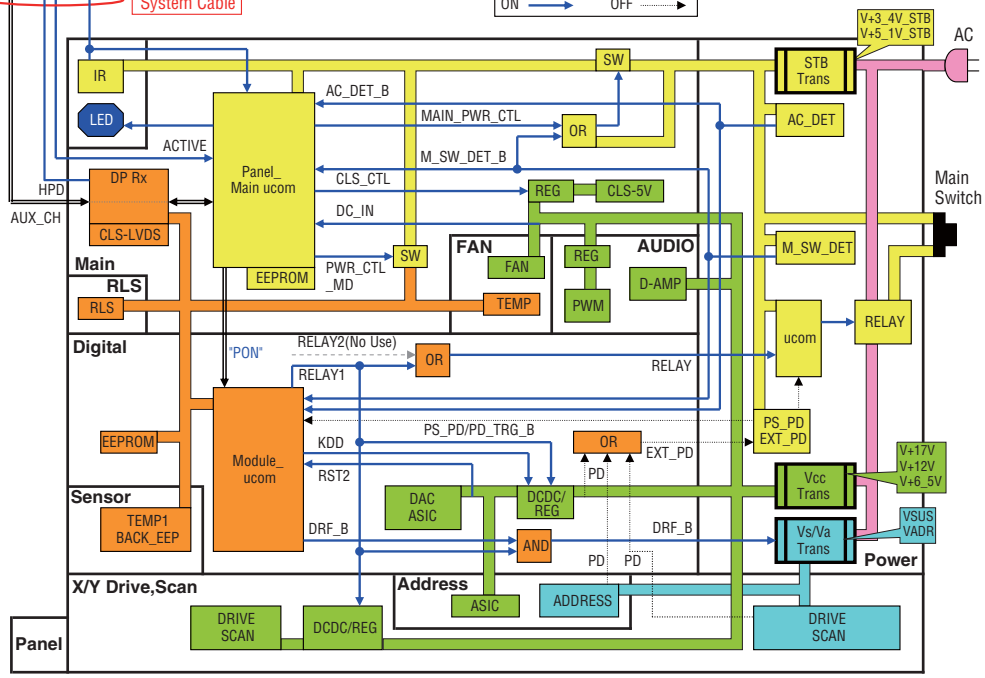
Periphery of the Panel main microcomputer, IR, DP Rx and module microcomputer are operated.
(As same state as the active standby)

PDP Screen ON



System Cable

ON → OFF



(MR) Output port setting

IF: ACTIVE	ON
MR Main: RELAY2	ON
MR Main: PSW1	ON

(MR) Input port state

MR Main: RST4	ON
MR Main: RST2	ON
MR Main: PD_TRG	OFF

(MR) Operation outline

All devices are operated.

(Panel) Output port setting

Panel Main: MAIN_PWR_CTL	ON
Panel Main: PWR_CTL_MD	ON
Panel Main: CLS_CTL	ON
DP Rx: HPD	ON
Module: RELAY1 / KDD	ON
Module: DRF_B	ON

(Panel) Input port state

Main: DC_IN	ON
Module: RST2	ON
Module: PS_PD/PD_TRG_B	OFF

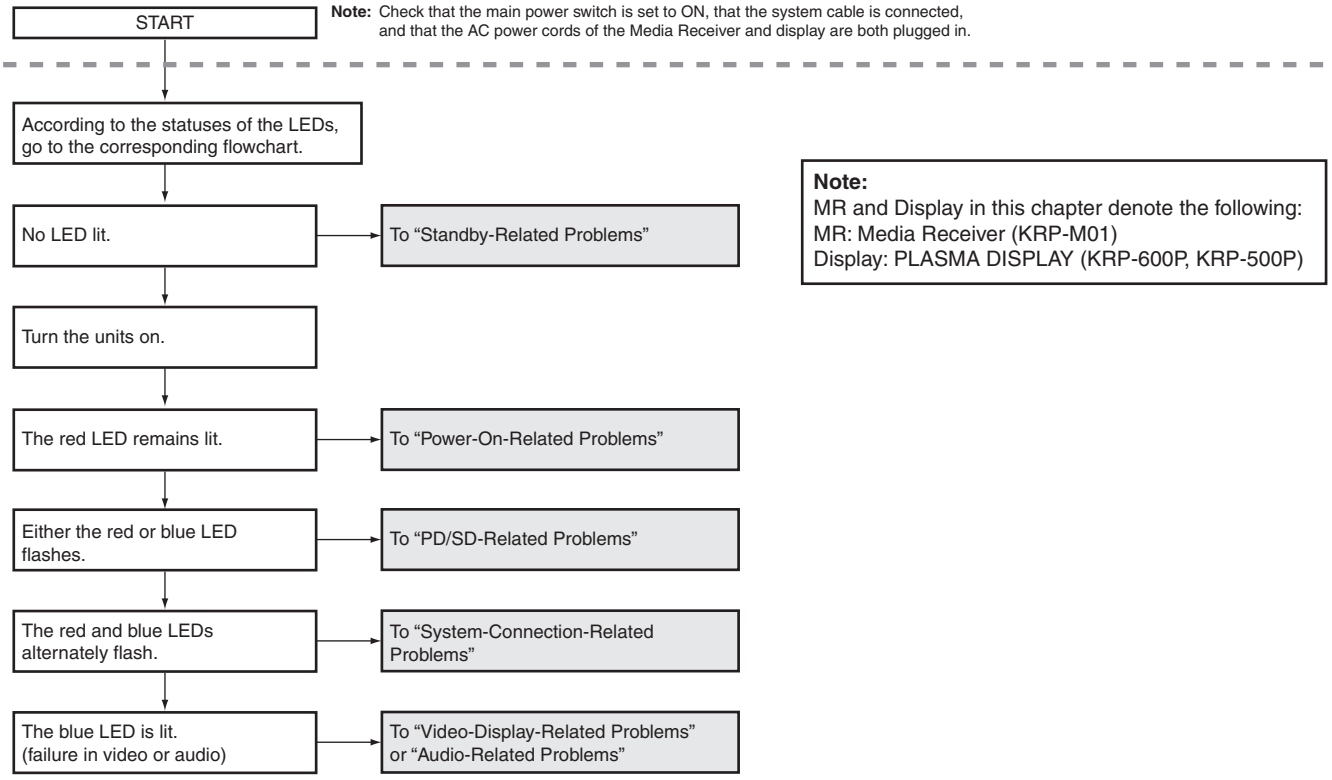
(Panel) Operation outline

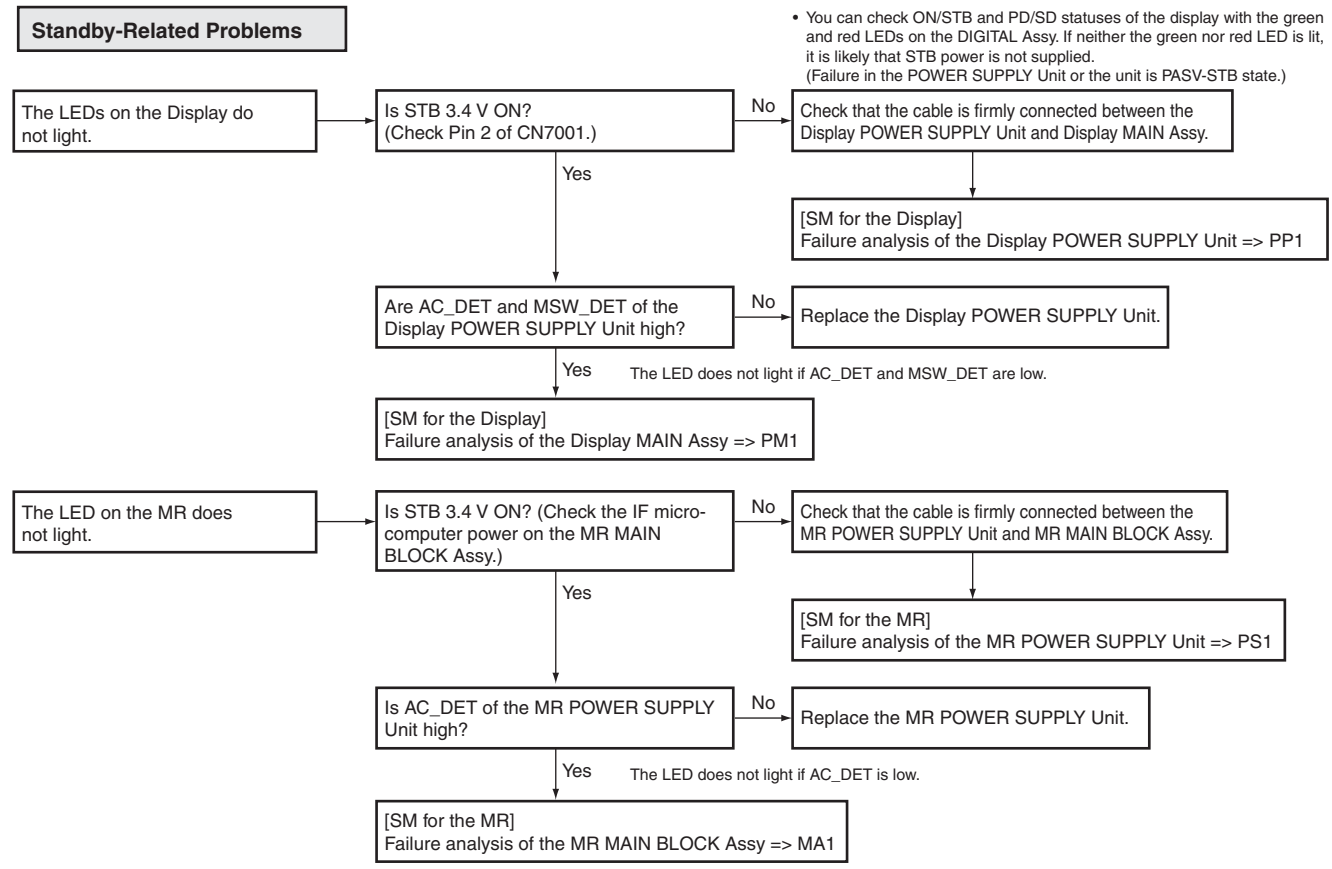
All devices are operated.

5.2 DIAGNOSIS FLOWCHART OF FAILURE ANALYSIS

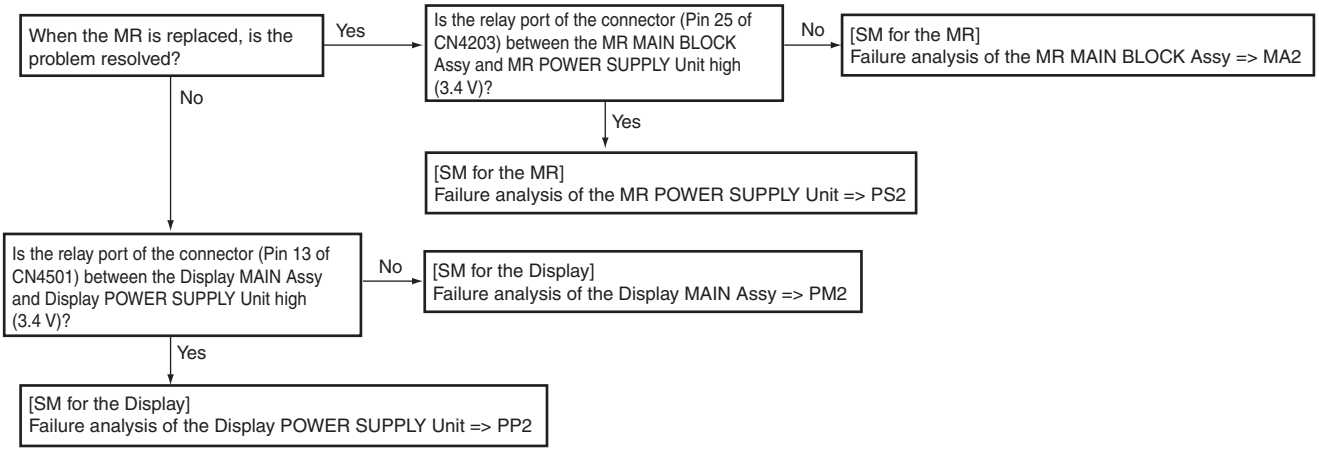
[1] WHOLE UNIT

Flowchart of Failure Analysis for The Whole Unit

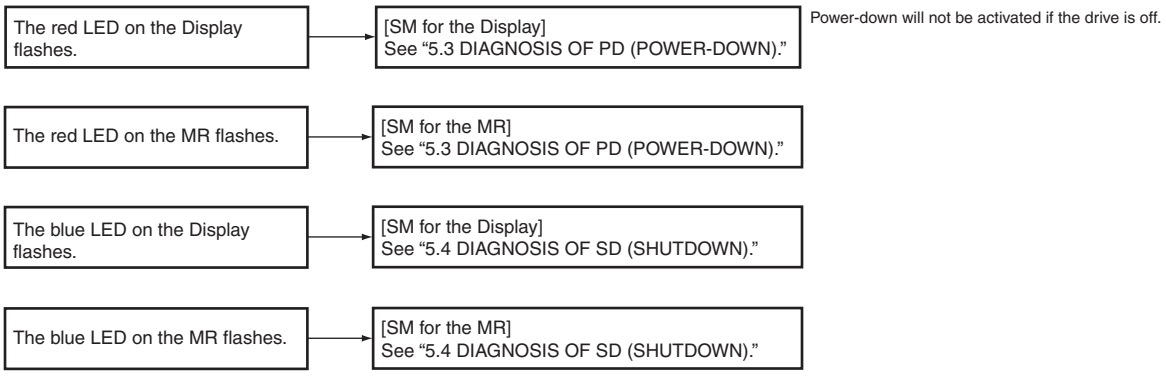

START
Note: Check that the main power switch is set to ON, that the system cable is connected, and that the AC power cords of the Media Receiver and display are both plugged in.
According to the statuses of the LEDs, go to the corresponding flowchart.
No LED lit.
To "Standby-Related Problems"
Turn the units on.
The red LED remains lit.
To "Power-On-Related Problems"
Either the red or blue LED flashes.
To "PD/SD-Related Problems"
The red and blue LEDs alternately flash.
To "System-Connection-Related Problems"
The blue LED is lit. (failure in video or audio)
To "Video-Display-Related Problems" or "Audio-Related Problems"
Note:
MR and Display in this chapter denote the following:
MR: Media Receiver (KRP-M01)
Display: PLASMA DISPLAY (KRP-600P, KRP-500P)


Standby-Related Problems
• You can check ON/STB and PD/SD statuses of the display with the green and red LEDs on the DIGITAL Assy. If neither the green nor red LED is lit, it is likely that STB power is not supplied. (Failure in the POWER SUPPLY Unit or the unit is PASV-STB state.)
The LEDs on the Display do not light.
Is STB 3.4 V ON? (Check Pin 2 of CN7001.)
No
Check that the cable is firmly connected between the Display POWER SUPPLY Unit and Display MAIN Assy.
[SM for the Display] Failure analysis of the Display POWER SUPPLY Unit => PP1
Yes
Are AC_DET and MSW_DET of the Display POWER SUPPLY Unit high?
No
Replace the Display POWER SUPPLY Unit.
Yes
The LED does not light if AC_DET and MSW_DET are low.
[SM for the Display] Failure analysis of the Display MAIN Assy => PM1
The LED on the MR does not light.
Is STB 3.4 V ON? (Check the IF micro-computer power on the MR MAIN BLOCK Assy.)
No
Check that the cable is firmly connected between the MR POWER SUPPLY Unit and MR MAIN BLOCK Assy.
[SM for the MR] Failure analysis of the MR POWER SUPPLY Unit => PS1
Yes
Is AC_DET of the MR POWER SUPPLY Unit high?
No
Replace the MR POWER SUPPLY Unit.
Yes
The LED does not light if AC_DET is low.
[SM for the MR] Failure analysis of the MR MAIN BLOCK Assy => MA1

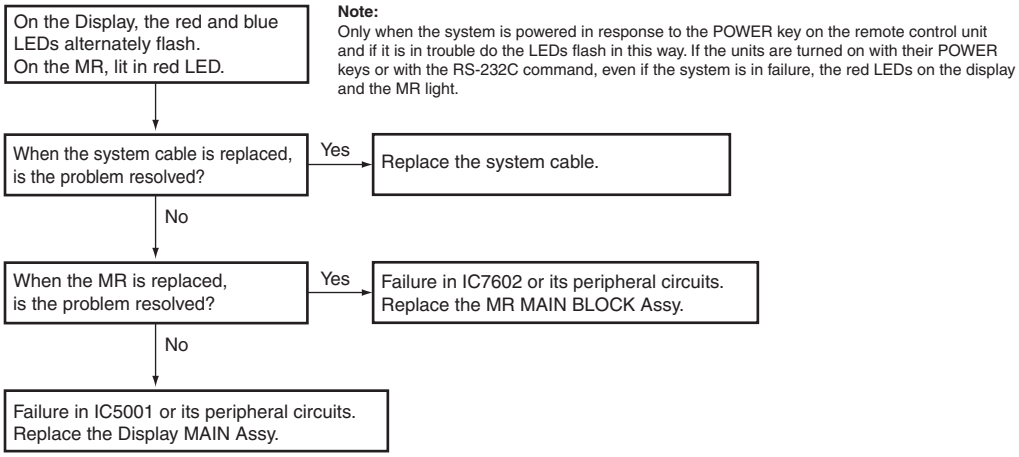
Power-On-Related Problems


When the MR is replaced, is the problem resolved?
Yes
Is the relay port of the connector (Pin 25 of CN4203) between the MR MAIN BLOCK Assy and MR POWER SUPPLY Unit high (3.4 V)?
No
[SM for the MR]
Failure analysis of the MR MAIN BLOCK Assy => MA2
Yes
[SM for the MR]
Failure analysis of the MR POWER SUPPLY Unit => PS2
No
Is the relay port of the connector (Pin 13 of CN4501) between the Display MAIN Assy and Display POWER SUPPLY Unit high (3.4 V)?
No
[SM for the Display]
Failure analysis of the Display MAIN Assy => PM2
Yes
[SM for the Display]
Failure analysis of the Display POWER SUPPLY Unit => PP2

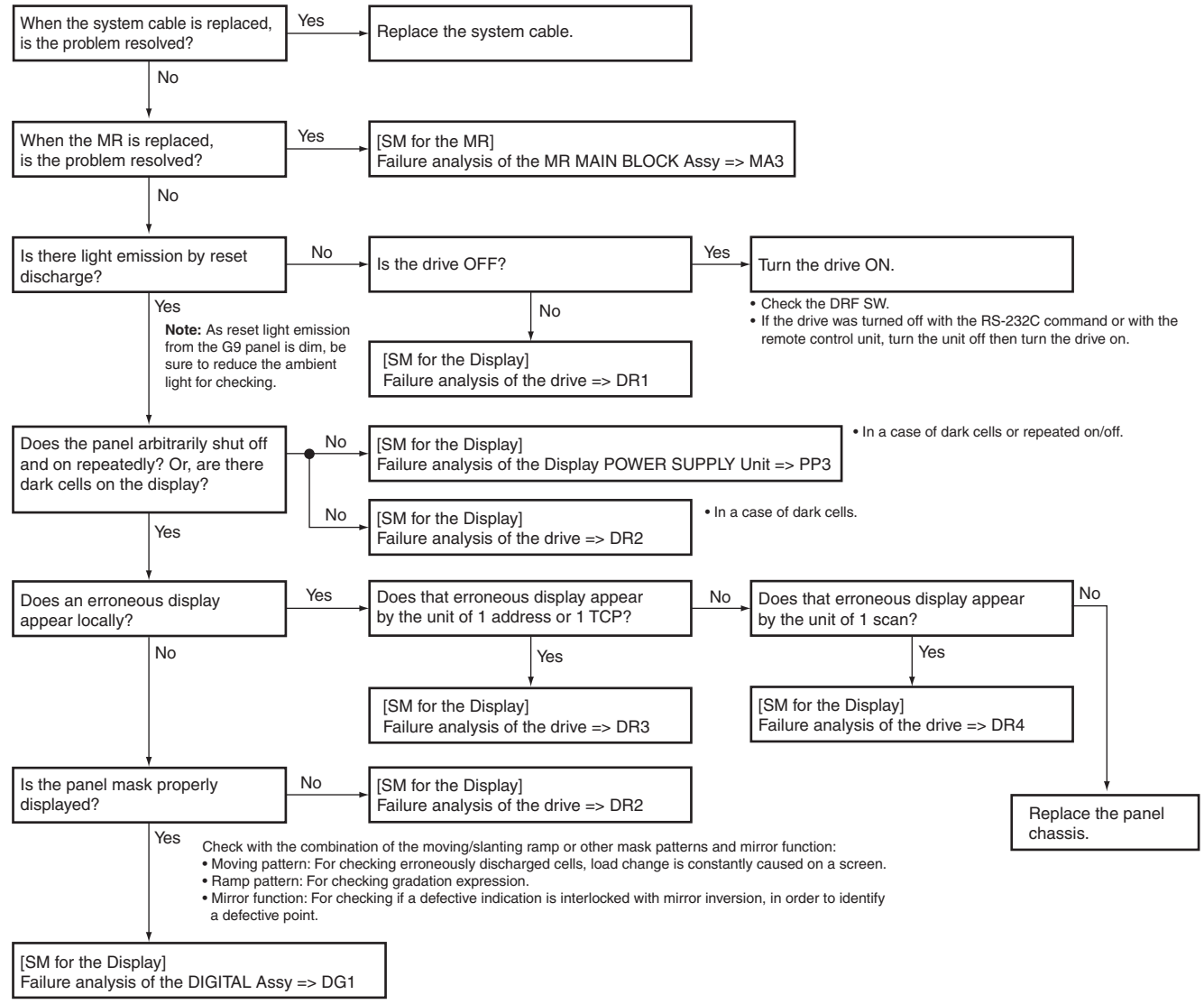
PD/SD-Related Problems


The red LED on the Display flashes.
[SM for the Display]
See “5.3 DIAGNOSIS OF PD (POWER-DOWN).”
Power-down will not be activated if the drive is off.
The red LED on the MR flashes.
[SM for the MR]
See “5.3 DIAGNOSIS OF PD (POWER-DOWN).”
The blue LED on the Display flashes.
[SM for the Display]
See “5.4 DIAGNOSIS OF SD (SHUTDOWN).”
The blue LED on the MR flashes.
[SM for the MR]
See “5.4 DIAGNOSIS OF SD (SHUTDOWN).”

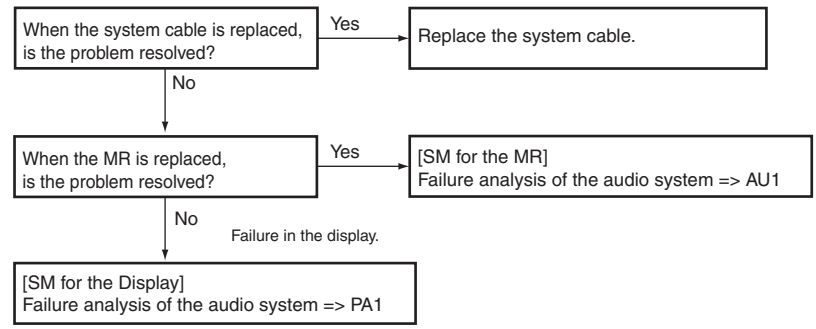
System-Connection-Related Problems


On the Display, the red and blue LEDs alternately flash.
On the MR, lit in red LED.
Note:
Only when the system is powered in response to the POWER key on the remote control unit and if it is in trouble do the LEDs flash in this way. If the units are turned on with their POWER keys or with the RS-232C command, even if the system is in failure, the red LEDs on the display and the MR light.
When the system cable is replaced, is the problem resolved?
Yes
Replace the system cable.
No
When the MR is replaced, is the problem resolved?
Yes
Failure in IC7602 or its peripheral circuits.
Replace the MR MAIN BLOCK Assy.
No
Failure in IC5001 or its peripheral circuits.
Replace the Display MAIN Assy.

Video-Display-Related Problems

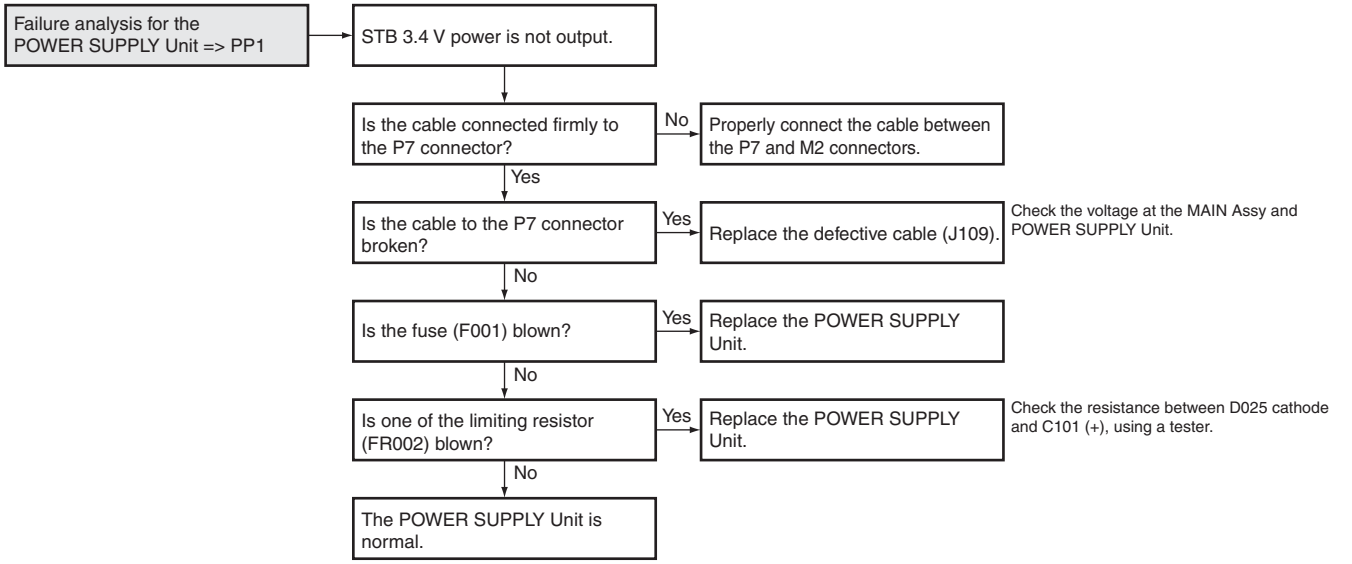

When the system cable is replaced, is the problem resolved?
Yes
Replace the system cable.
No
When the MR is replaced, is the problem resolved?
Yes
[SM for the MR]
Failure analysis of the MR MAIN BLOCK Assy => MA3
No
Is there light emission by reset discharge?
No
Is the drive OFF?
Yes
Turn the drive ON.
• Check the DRF SW.
• If the drive was turned off with the RS-232C command or with the remote control unit, turn the unit off then turn the drive on.
No
[SM for the Display]
Failure analysis of the drive => DR1
Yes
Note: As reset light emission from the G9 panel is dim, be sure to reduce the ambient light for checking.
Does the panel arbitrarily shut off and on repeatedly? Or, are there dark cells on the display?
No
[SM for the Display]
Failure analysis of the Display POWER SUPPLY Unit => PP3
• In a case of dark cells or repeated on/off.
No
[SM for the Display]
Failure analysis of the drive => DR2
• In a case of dark cells.
Yes
Does an erroneous display appear locally?
Yes
Does that erroneous display appear by the unit of 1 address or 1 TCP?
No
Does that erroneous display appear by the unit of 1 scan?
No
Yes
[SM for the Display]
Failure analysis of the drive => DR3
Yes
[SM for the Display]
Failure analysis of the drive => DR4
No
Replace the panel chassis.
Is the panel mask properly displayed?
No
[SM for the Display]
Failure analysis of the drive => DR2
Yes
Check with the combination of the moving/slanting ramp or other mask patterns and mirror function:
• Moving pattern: For checking erroneously discharged cells, load change is constantly caused on a screen.
• Ramp pattern: For checking gradation expression.
• Mirror function: For checking if a defective indication is interlocked with mirror inversion, in order to identify a defective point.
[SM for the Display]
Failure analysis of the DIGITAL Assy => DG1

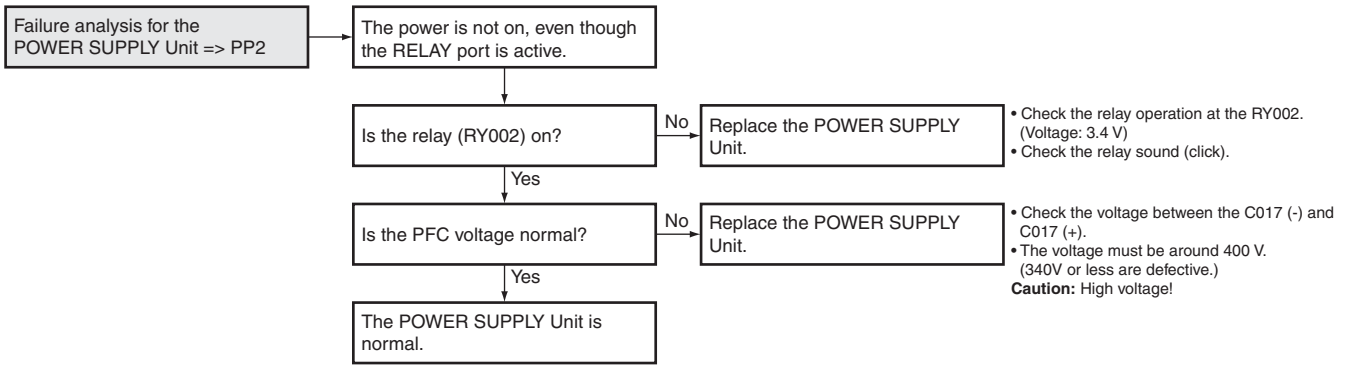
Audio-Related Problems

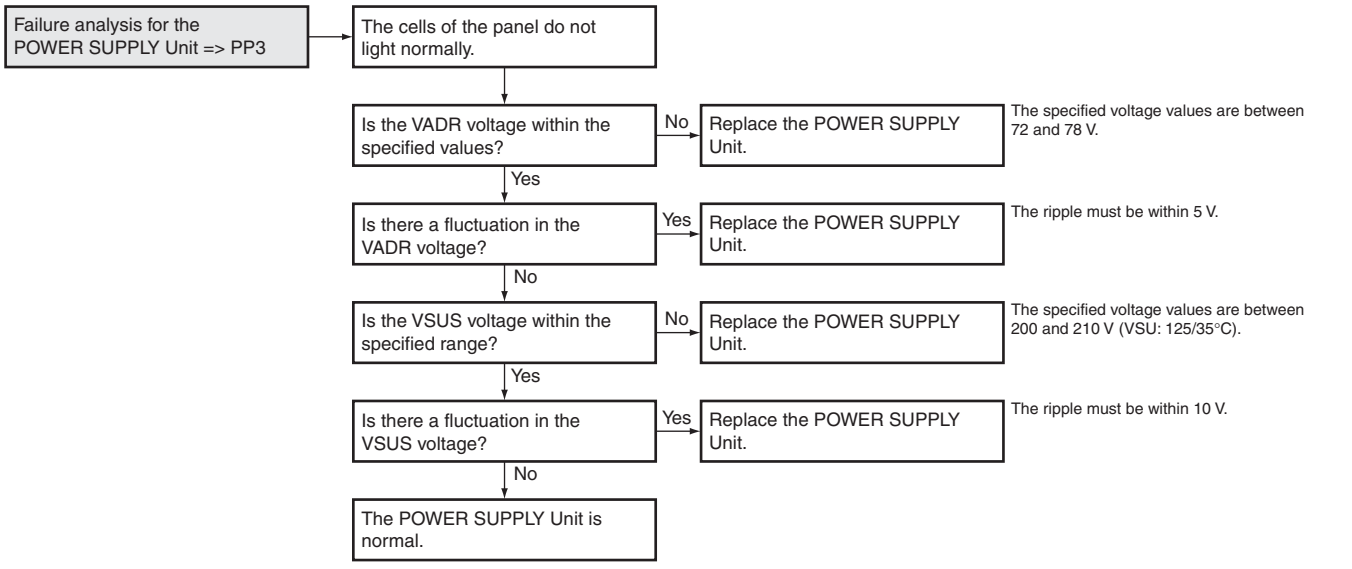

When the system cable is replaced, is the problem resolved?
Yes
Replace the system cable.
No
When the MR is replaced, is the problem resolved?
Yes
[SM for the MR]
Failure analysis of the audio system => AU1
No
Failure in the display.
[SM for the Display]
Failure analysis of the audio system => PA1

[2] POWER SUPPLY UNIT

Flowchart of Failure Analysis for The POWER SUPPLY Unit

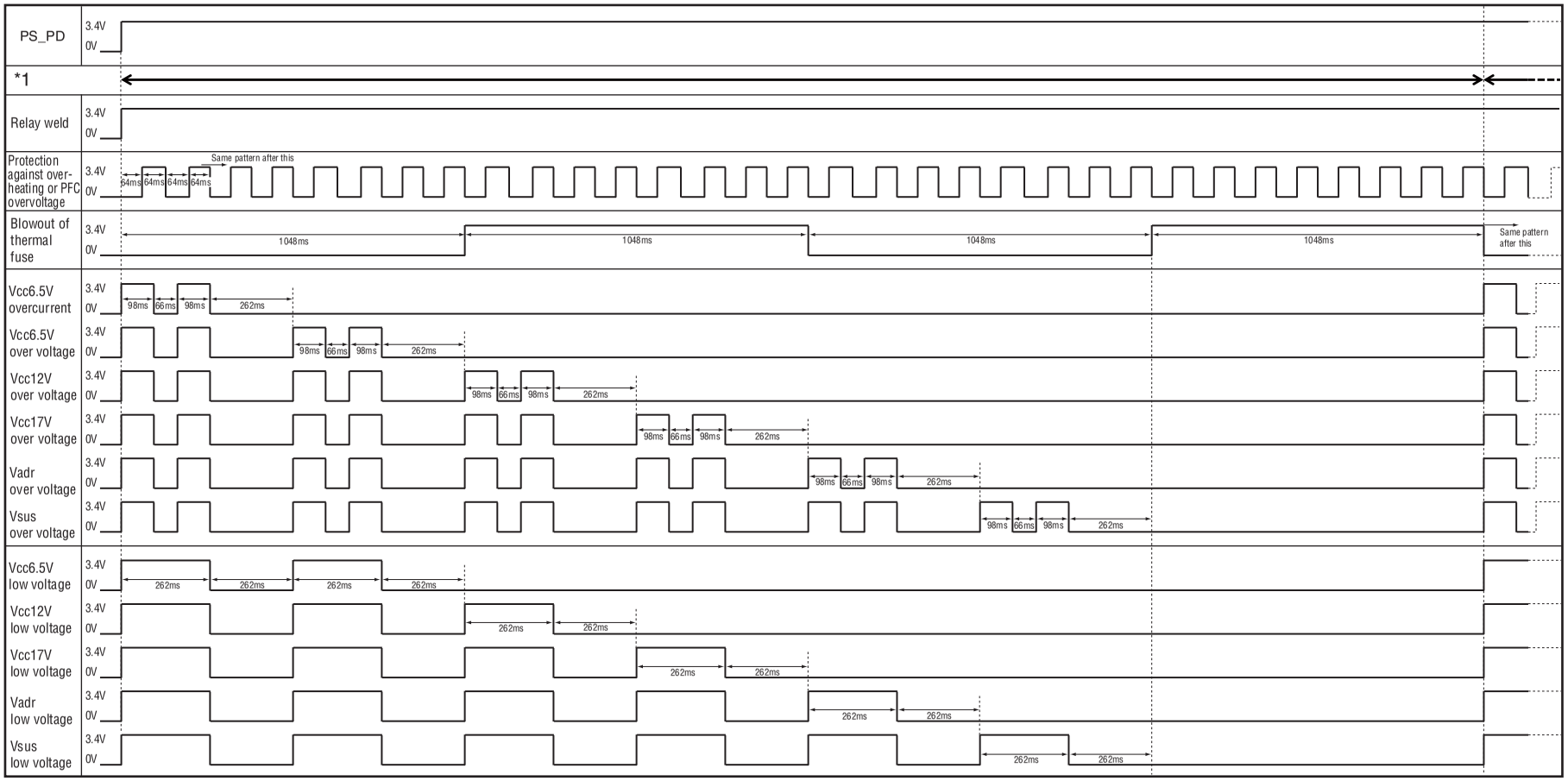

Failure analysis for the POWER SUPPLY Unit => PP1
STB 3.4 V power is not output.
Is the cable connected firmly to the P7 connector?
No
Properly connect the cable between the P7 and M2 connectors.
Yes
Is the cable to the P7 connector broken?
Yes
Replace the defective cable (J109).
Check the voltage at the MAIN Assy and POWER SUPPLY Unit.
No
Is the fuse (F001) blown?
Yes
Replace the POWER SUPPLY Unit.
No
Is one of the limiting resistor (FR002) blown?
Yes
Replace the POWER SUPPLY Unit.
Check the resistance between D025 cathode and C101 (+), using a tester.
No
The POWER SUPPLY Unit is normal.


Failure analysis for the POWER SUPPLY Unit => PP2
The power is not on, even though the RELAY port is active.
Is the relay (RY002) on?
No
Replace the POWER SUPPLY Unit.
• Check the relay operation at the RY002. (Voltage: 3.4 V)
• Check the relay sound (click).
Yes
Is the PFC voltage normal?
No
Replace the POWER SUPPLY Unit.
• Check the voltage between the C017 (-) and C017 (+).
• The voltage must be around 400 V. (340V or less are defective.)
Caution: High voltage!
Yes
The POWER SUPPLY Unit is normal.


Failure analysis for the POWER SUPPLY Unit => PP3
The cells of the panel do not light normally.
Is the VADR voltage within the specified values?
No
Replace the POWER SUPPLY Unit.
The specified voltage values are between 72 and 78 V.
Yes
Is there a fluctuation in the VADR voltage?
Yes
Replace the POWER SUPPLY Unit.
The ripple must be within 5 V.
No
Is the VSUS voltage within the specified range?
No
Replace the POWER SUPPLY Unit.
The specified voltage values are between 200 and 210 V (VSU: 125/35°C).
Yes
Is there a fluctuation in the VSUS voltage?
Yes
Replace the POWER SUPPLY Unit.
The ripple must be within 10 V.
No
The POWER SUPPLY Unit is normal.

■ Flashing Patterns Triggered by PS_PD

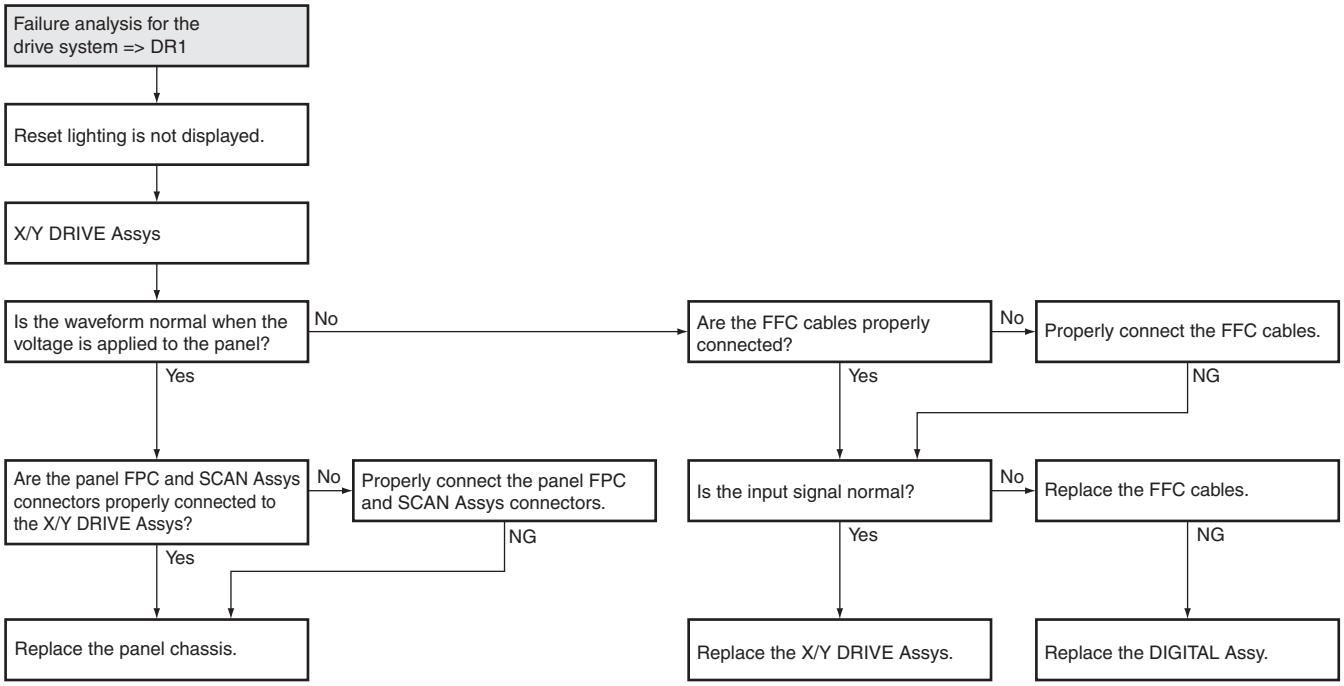
- Voltage waveforms at the GND terminal and Pin 3 (center pin, DGCLK) of CN201
- This flashing pattern continues while AC power is supplied in PS_PD.

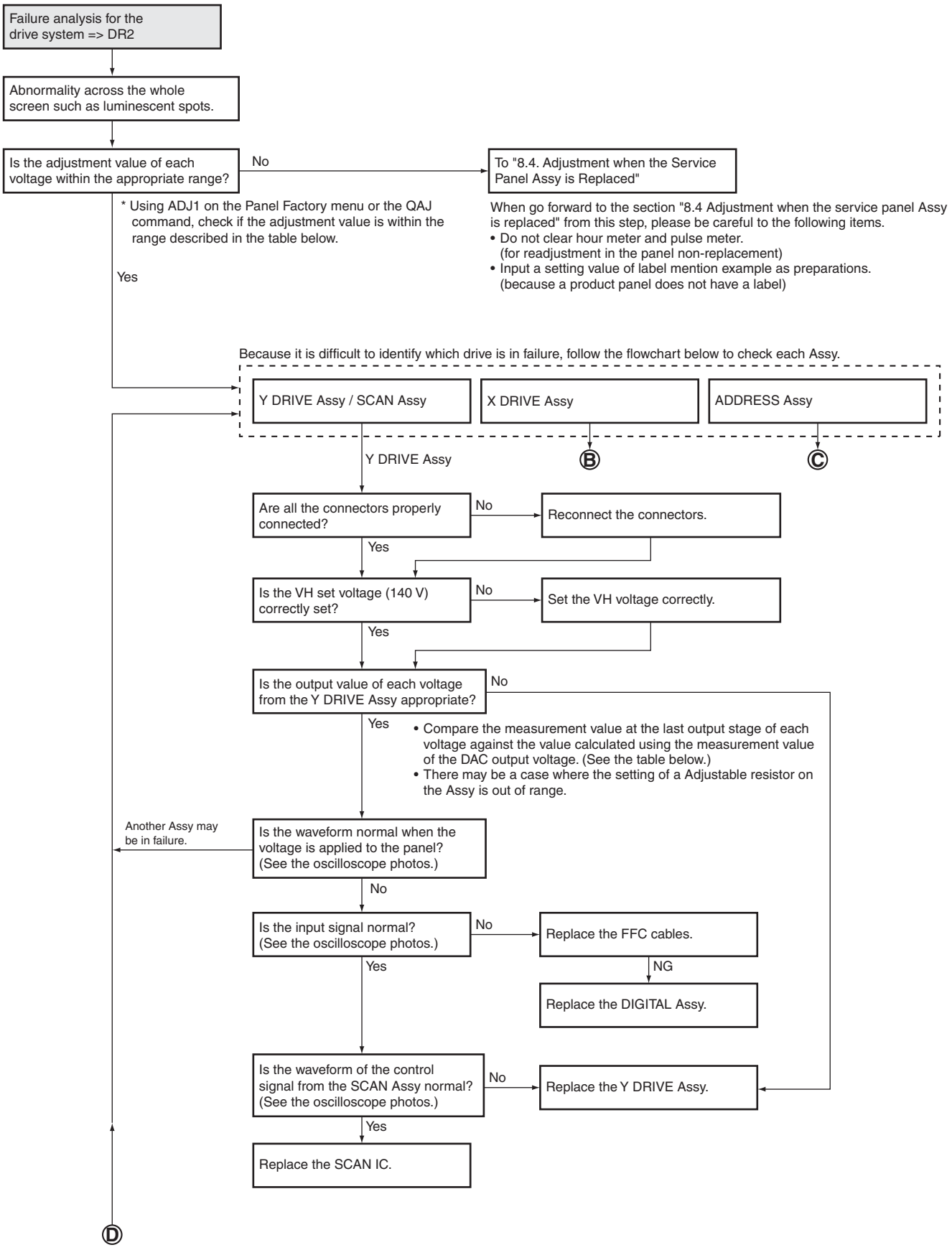


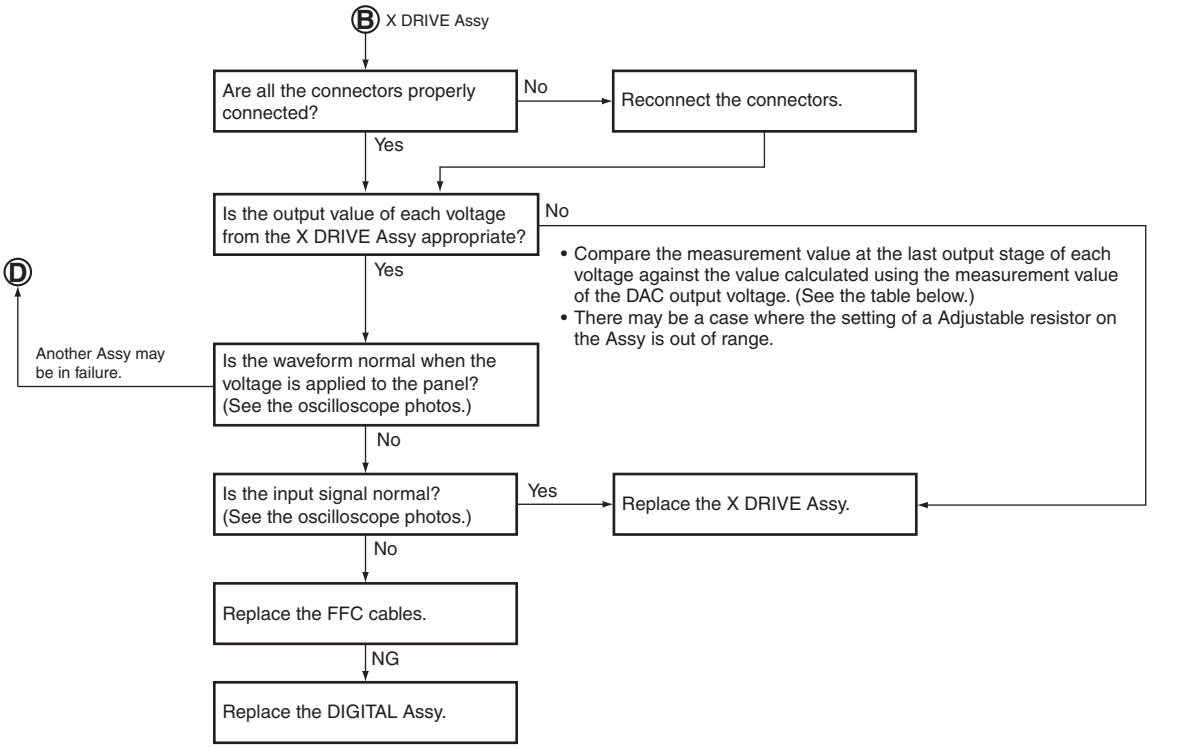
*1 Repetition of the interval indicated by the arrows

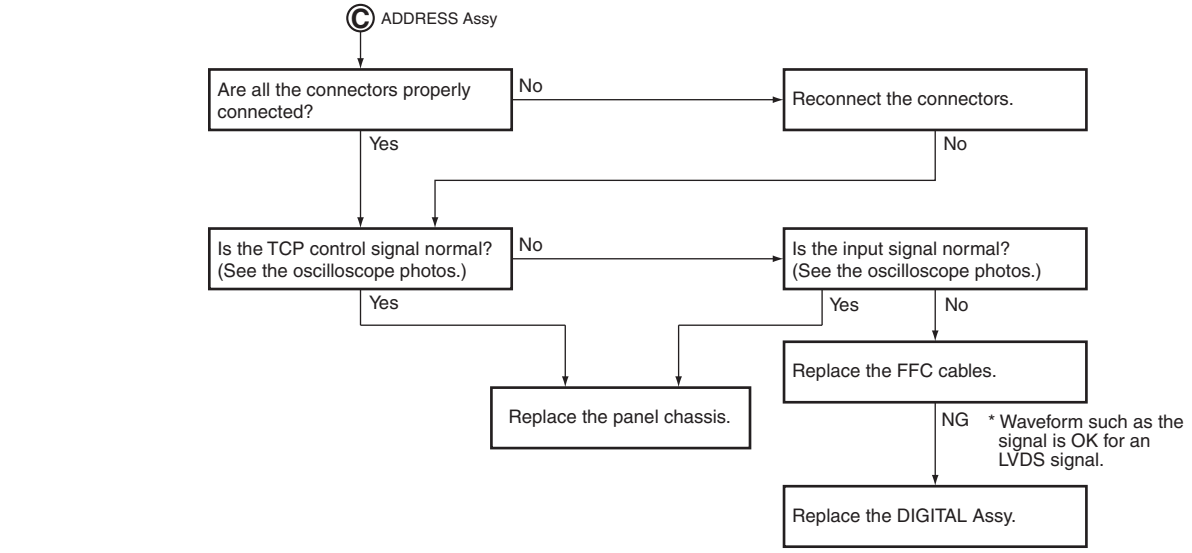
[3] DRIVE ASSY

Flowchart of Failure Analysis for The Drive Assy


Failure analysis for the drive system => DR1
Reset lighting is not displayed.
X/Y DRIVE Assys
Is the waveform normal when the voltage is applied to the panel?
No
Yes
Are the panel FPC and SCAN Assys connectors properly connected to the X/Y DRIVE Assys?
No
Properly connect the panel FPC and SCAN Assys connectors.
NG
Yes
Replace the panel chassis.
Are the FFC cables properly connected?
No
Properly connect the FFC cables.
Yes
NG
Is the input signal normal?
No
Replace the FFC cables.
Yes
NG
Replace the X/Y DRIVE Assys.
Replace the DIGITAL Assy.


Failure analysis for the drive system => DR2
Abnormality across the whole screen such as luminescent spots.
Is the adjustment value of each voltage within the appropriate range?
No
To "8.4. Adjustment when the Service Panel Assy is Replaced"
* Using ADJ1 on the Panel Factory menu or the QAJ command, check if the adjustment value is within the range described in the table below.
When go forward to the section "8.4 Adjustment when the service panel Assy is replaced" from this step, please be careful to the following items.
• Do not clear hour meter and pulse meter. (for readjustment in the panel non-replacement)
• Input a setting value of label mention example as preparations. (because a product panel does not have a label)
Yes
Because it is difficult to identify which drive is in failure, follow the flowchart below to check each Assy.
Y DRIVE Assy / SCAN Assy
X DRIVE Assy
ADDRESS Assy
Y DRIVE Assy
Ⓑ
Ⓒ
Are all the connectors properly connected?
No
Reconnect the connectors.
Yes
Is the VH set voltage (140 V) correctly set?
No
Set the VH voltage correctly.
Yes
Is the output value of each voltage from the Y DRIVE Assy appropriate?
No
Yes
• Compare the measurement value at the last output stage of each voltage against the value calculated using the measurement value of the DAC output voltage. (See the table below.)
• There may be a case where the setting of a Adjustable resistor on the Assy is out of range.
Another Assy may be in failure.
Is the waveform normal when the voltage is applied to the panel? (See the oscilloscope photos.)
No
Is the input signal normal? (See the oscilloscope photos.)
No
Replace the FFC cables.
NG
Replace the DIGITAL Assy.
Yes
Is the waveform of the control signal from the SCAN Assy normal? (See the oscilloscope photos.)
No
Replace the Y DRIVE Assy.
Yes
Replace the SCAN IC.
Ⓓ

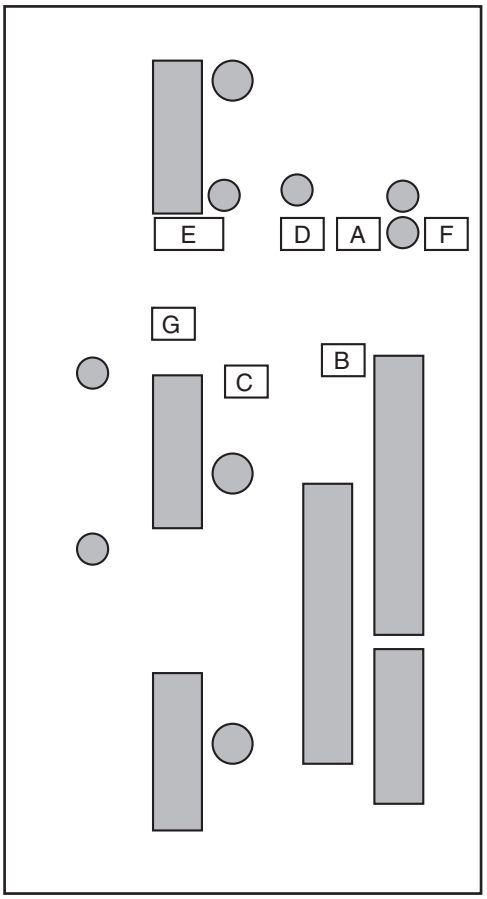

Ⓑ X DRIVE Assy
Are all the connectors properly connected?
No
Reconnect the connectors.
Yes
Is the output value of each voltage from the X DRIVE Assy appropriate?
No
• Compare the measurement value at the last output stage of each voltage against the value calculated using the measurement value of the DAC output voltage. (See the table below.)
• There may be a case where the setting of a Adjustable resistor on the Assy is out of range.
Ⓓ
Yes
Another Assy may be in failure.
Is the waveform normal when the voltage is applied to the panel? (See the oscilloscope photos.)
No
Is the input signal normal? (See the oscilloscope photos.)
Yes
Replace the X DRIVE Assy.
No
Replace the FFC cables.
NG
Replace the DIGITAL Assy.


Ⓒ ADDRESS Assy
Are all the connectors properly connected?
No
Reconnect the connectors.
Yes
No
Is the TCP control signal normal? (See the oscilloscope photos.)
No
Is the input signal normal? (See the oscilloscope photos.)
Yes
Yes
No
Replace the FFC cables.
Replace the panel chassis.
NG
* Waveform such as the signal is OK for an LVDS signal.
Replace the DIGITAL Assy.

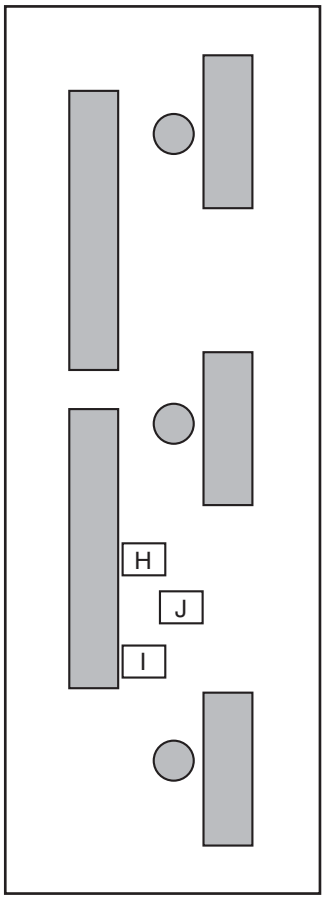
Assy Name	Voltage to be Checked (V)	Adjustable Range		Measurement Point		Computation Formula for Voltage (Absolute Value)	
		50-inch (LFT)	50-inch (Others)	Output at the Last Stage	DAC Output (*2)	Computation Using DAC Output Voltage (V)	Computation Using Adjustment Value (*4)
Y DRIVE Assy	VSNOFS	101 to 157	085 to 140	CN2404 (*1)	Lower side of R2723 (*3)	55.54 - VOFS_ADJ × 13.91	VOF value × 0.18 + 9.6
	VYRST	001 to 074	001 to 093	CN2401 (*1)	Upper side of R2621 (*3)	VYPRST_ADJ × 62.495 + 75.2	VRP value × 0.81 + 74.4
	VKNOFS1_2	121 to 164	117 to 159	CN2405 (*1)	Left side of R2754 (*3)	YVKNOFS1_ADJ × 36.85 + 159.3	(V1F value+VYF value-128) × 0.48 + 158.8
	VKNOFS3	107 to 149	107 to 149	CN2403 (*1)	Right side of R2757 (*3)	YVKNOFS3_ADJ × 36.85 + 159.3	(V3F value+VYF value-128) × 0.48 + 158.8
	VKNOFS4	151 to 193	128 to 170	CN2406 (*1)	Right side of R2755 (*3)	YVKNOFS4_ADJ × 36.85 + 159.3	(V4F value+VYF value-128) × 0.48 + 158.8
X DRIVE Assy	XKOFS1	085	085	CN1302 (*1)	K1402 (*1)	XKNOFS1_ADJ × 27.3 + 30	VX1 value × 0.35 + 29.7
	XKOFS2	047	047	CN1301 (*1)	K1401 (*1)	XKNOFS2_ADJ × 25.0 + 69.8	VX2 value × 0.32 + 69.5

(*1): These parts have not been mounted.
(*2): It is recommended to measure the DAC output voltage with the drive off.
(*3): View when the Assy is mounted on the unit and viewed from the rear.
(*4): The value calculated using an adjustment value may be different from the value measured at the last output stage, because various corrections such as temperature correction are not taken into consideration.

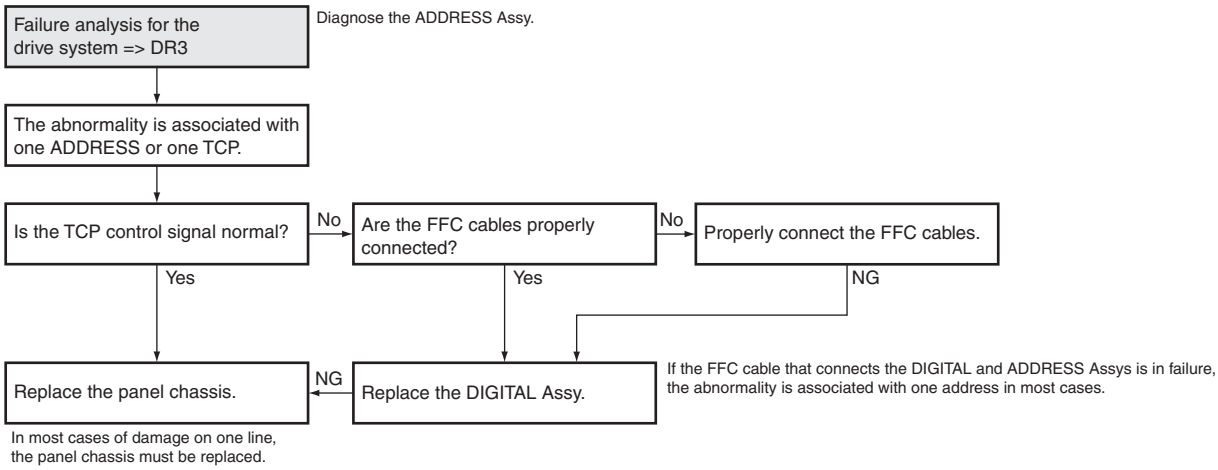
Diagrammatic view of the Y DRIVE Assy

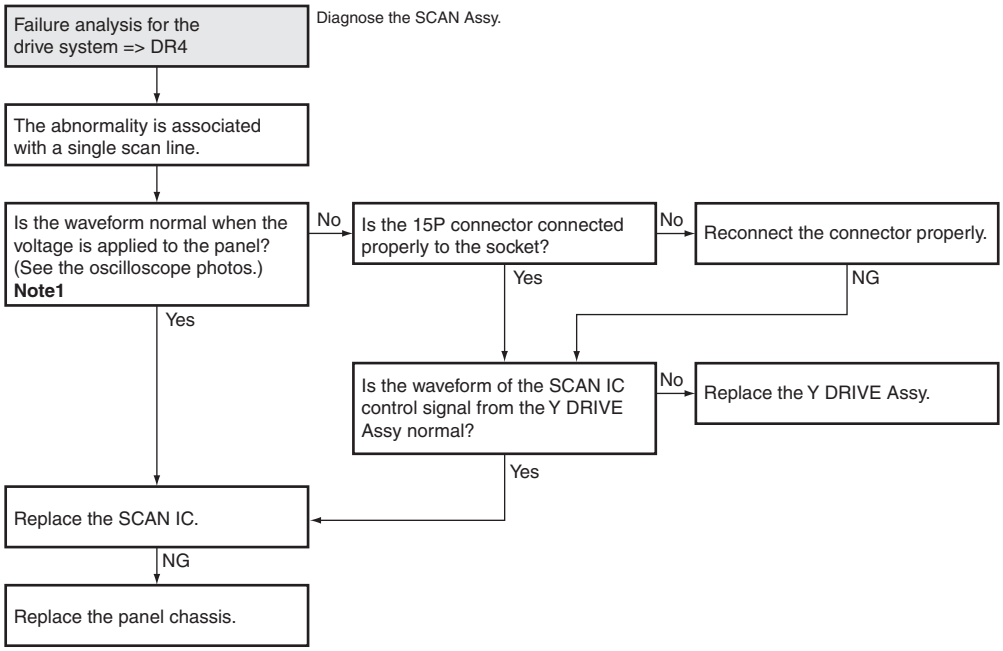


Diagrammatic view of the X DRIVE Assy



A	R2754,R2755,R2757
B	R2723
C	R2621
D	CN2405
E	CN2403,CN2406
F	CN2404
G	CN2401
H	K1401
I	K1402
J	CN1301,CN1302


Failure analysis for the drive system => DR3
Diagnose the ADDRESS Assy.
The abnormality is associated with one ADDRESS or one TCP.
Is the TCP control signal normal?
No
Are the FFC cables properly connected?
No
Properly connect the FFC cables.
Yes
Yes
NG
Replace the panel chassis.
NG
Replace the DIGITAL Assy.
If the FFC cable that connects the DIGITAL and ADDRESS Assys is in failure, the abnormality is associated with one address in most cases.
In most cases of damage on one line, the panel chassis must be replaced.


Failure analysis for the drive system => DR4
Diagnose the SCAN Assy.
The abnormality is associated with a single scan line.
Is the waveform normal when the voltage is applied to the panel? (See the oscilloscope photos.) Note1
No
Is the 15P connector connected properly to the socket?
No
Reconnect the connector properly.
Yes
NG
Yes
Is the waveform of the SCAN IC control signal from the Y DRIVE Assy normal?
No
Replace the Y DRIVE Assy.
Yes
Replace the SCAN IC.
NG
Replace the panel chassis.

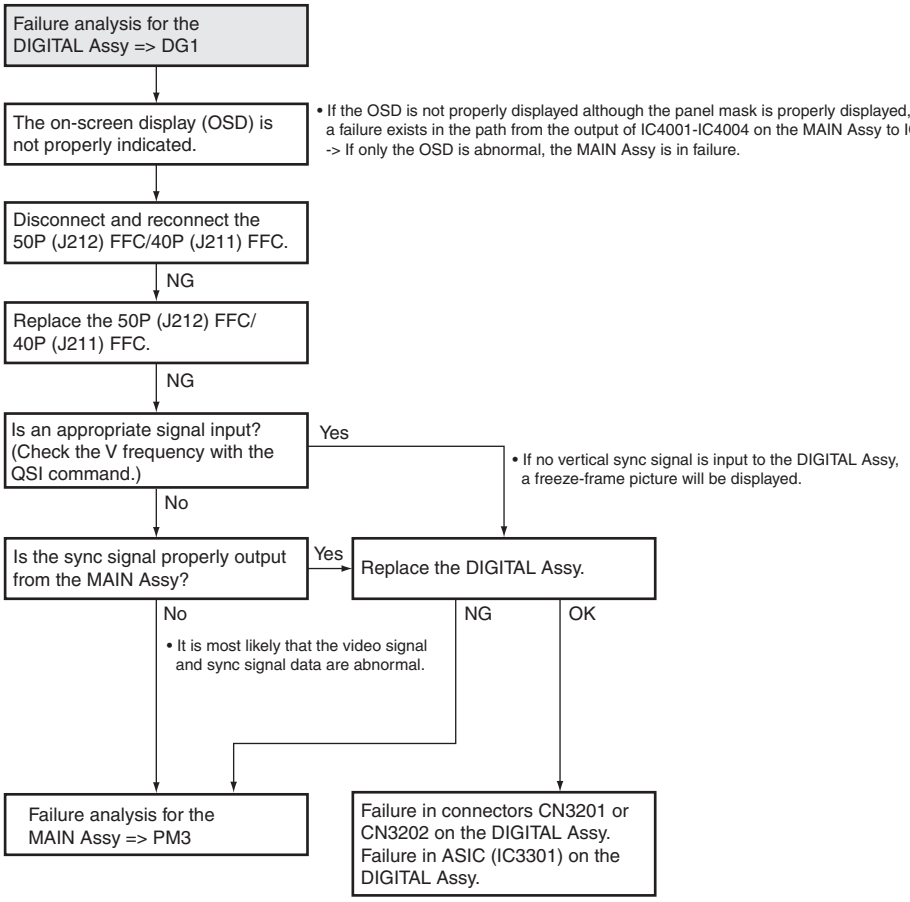
Note 1:
In a case where confirmation of the waveform for a particular line is impossible with an oscilloscope, it is possible to identify a defective line by lighting a particular line, using the following commands: (The SCAN IC outputting each line refers to the table.)
PON
FAY
MKRS01
BSMS01 (Command for reducing phosphor burn-in)
$250000**** (In place of ****, input a figure between 0001 and 1080, which denotes an ordinal number of a particular line.)

With the above commands, a particular line lights. Be careful to light a line for as short a time as possible, to avoid phosphor burn-in.
After a particular line is identified, display an all-white screen to protect the screen from burn-in.

IC No.	Line Number	Object Line
No 1	66	0001 to 0066
No 2	68	0067 to 0134
No 3	68	0135 to 0202
No 4	68	0203 to 0270
No 5	68	0271 to 0338
No 6	68	0339 to 0406
No 7	68	0407 to 0474
No 8	66	0475 to 0540
No 9	66	0541 to 0606
No 10	68	0607 to 0674
No 11	68	0675 to 0742
No 12	68	0743 to 0810
No 13	68	0811 to 0878
No 14	68	0879 to 0946
No 15	68	0947 to 1014
No 16	66	1015 to 1080

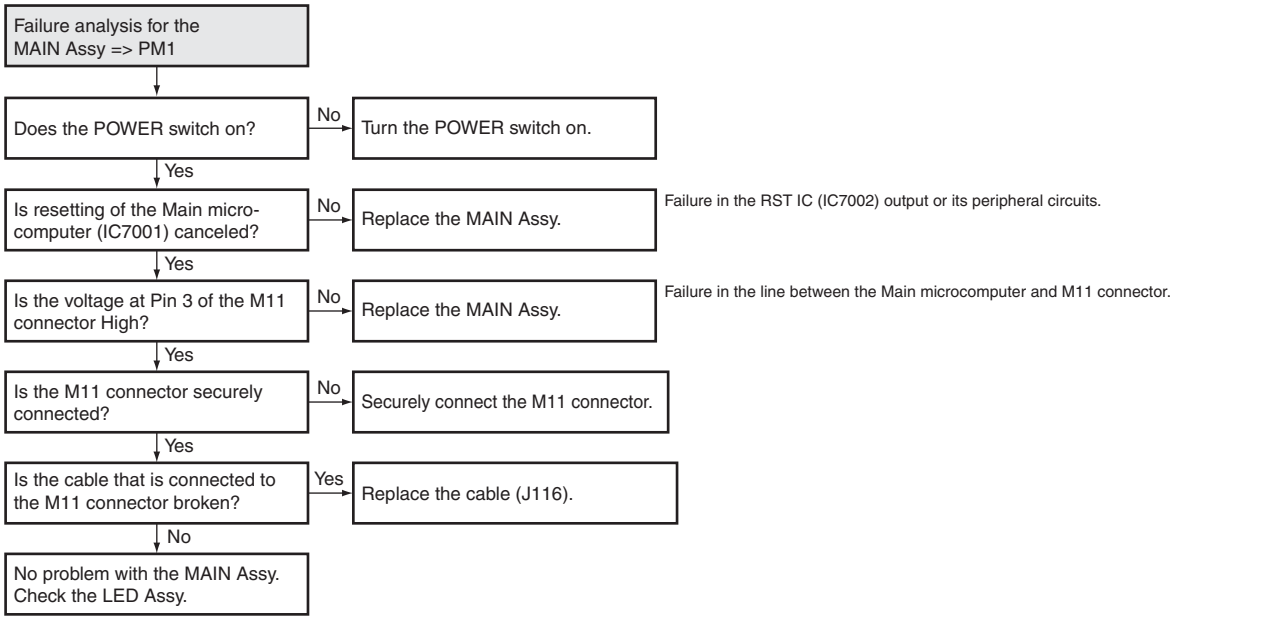
[4] DIGITAL ASSY

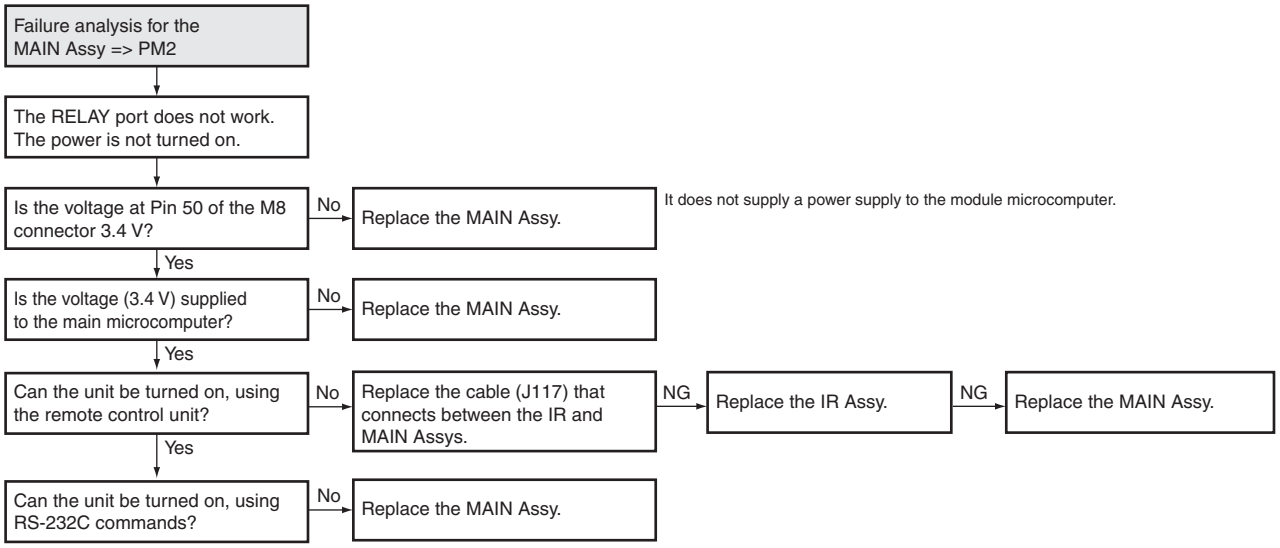
Flowchart of Failure Analysis for The DIGITAL Assy

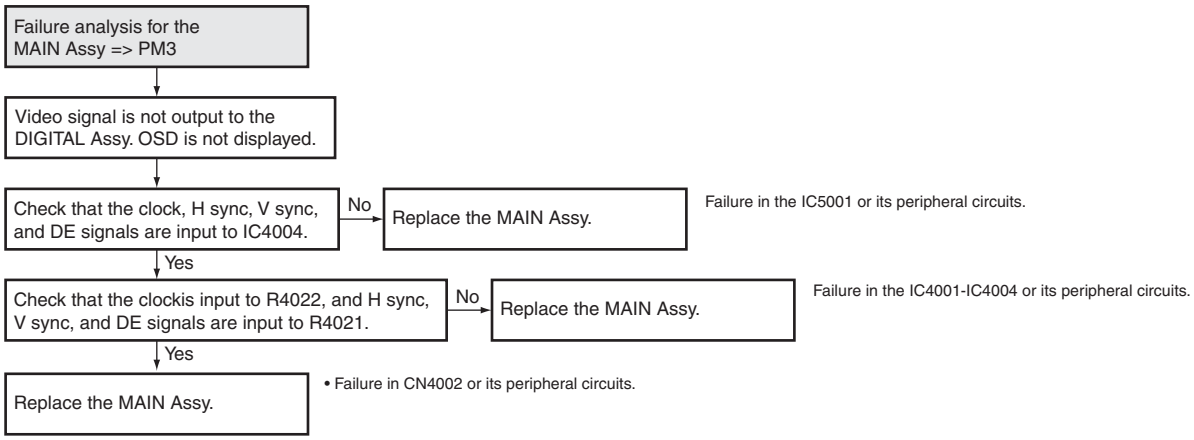

Failure analysis for the DIGITAL Assy => DG1
The on-screen display (OSD) is not properly indicated.
• If the OSD is not properly displayed although the panel mask is properly displayed, a failure exists in the path from the output of IC4001-IC4004 on the MAIN Assy to IC3301 on the DIGITAL Assy.
-> If only the OSD is abnormal, the MAIN Assy is in failure.
Disconnect and reconnect the 50P (J212) FFC/40P (J211) FFC.
NG
Replace the 50P (J212) FFC/ 40P (J211) FFC.
NG
Is an appropriate signal input? (Check the V frequency with the QSI command.)
Yes
• If no vertical sync signal is input to the DIGITAL Assy, a freeze-frame picture will be displayed.
No
Is the sync signal properly output from the MAIN Assy?
Yes
Replace the DIGITAL Assy.
No
NG
OK
• It is most likely that the video signal and sync signal data are abnormal.
Failure analysis for the MAIN Assy => PM3
Failure in connectors CN3201 or CN3202 on the DIGITAL Assy.
Failure in ASIC (IC3301) on the DIGITAL Assy.

[5] MAIN ASSY (PANEL INTERFACE)

Flowchart of Failure Analysis for The MAIN Assy

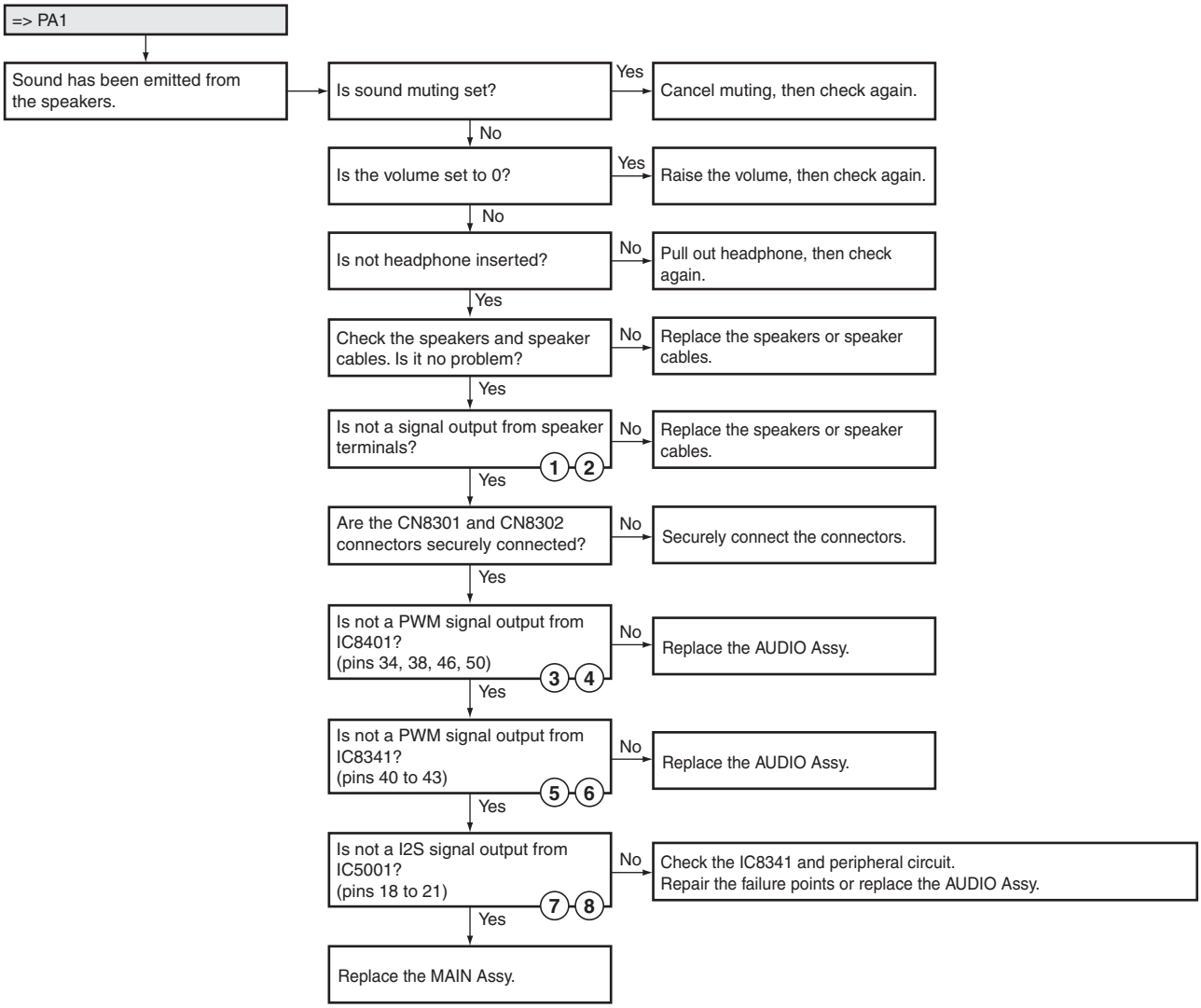

Failure analysis for the MAIN Assy => PM1
Does the POWER switch on?
No
Turn the POWER switch on.
Yes
Is resetting of the Main micro-computer (IC7001) canceled?
No
Replace the MAIN Assy.
Failure in the RST IC (IC7002) output or its peripheral circuits.
Yes
Is the voltage at Pin 3 of the M11 connector High?
No
Replace the MAIN Assy.
Failure in the line between the Main microcomputer and M11 connector.
Yes
Is the M11 connector securely connected?
No
Securely connect the M11 connector.
Yes
Is the cable that is connected to the M11 connector broken?
Yes
Replace the cable (J116).
No
No problem with the MAIN Assy. Check the LED Assy.


Failure analysis for the MAIN Assy => PM2
The RELAY port does not work. The power is not turned on.
Is the voltage at Pin 50 of the M8 connector 3.4 V?
No
Replace the MAIN Assy.
It does not supply a power supply to the module microcomputer.
Yes
Is the voltage (3.4 V) supplied to the main microcomputer?
No
Replace the MAIN Assy.
Yes
Can the unit be turned on, using the remote control unit?
No
Replace the cable (J117) that connects between the IR and MAIN Assys.
NG
Replace the IR Assy.
NG
Replace the MAIN Assy.
Yes
Can the unit be turned on, using RS-232C commands?
No
Replace the MAIN Assy.


Failure analysis for the MAIN Assy => PM3
Video signal is not output to the DIGITAL Assy. OSD is not displayed.
Check that the clock, H sync, V sync, and DE signals are input to IC4004.
No
Replace the MAIN Assy.
Failure in the IC5001 or its peripheral circuits.
Yes
Check that the clockis input to R4022, and H sync, V sync, and DE signals are input to R4021.
No
Replace the MAIN Assy.
Failure in the IC4001-IC4004 or its peripheral circuits.
Yes
Replace the MAIN Assy.
• Failure in CN4002 or its peripheral circuits.

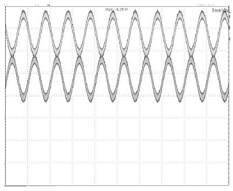
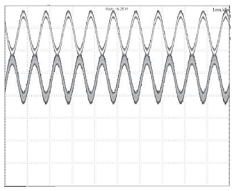
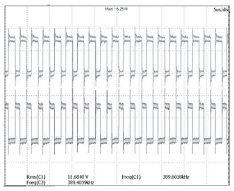
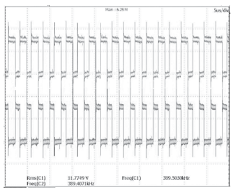
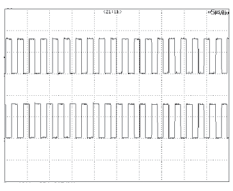
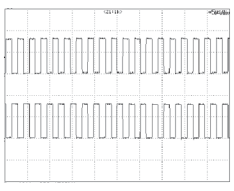
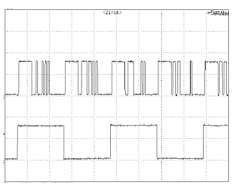
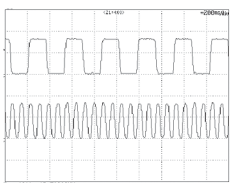
[6] AUDIO SYSTEM

Flowchart of Failure Analysis for The Audio System



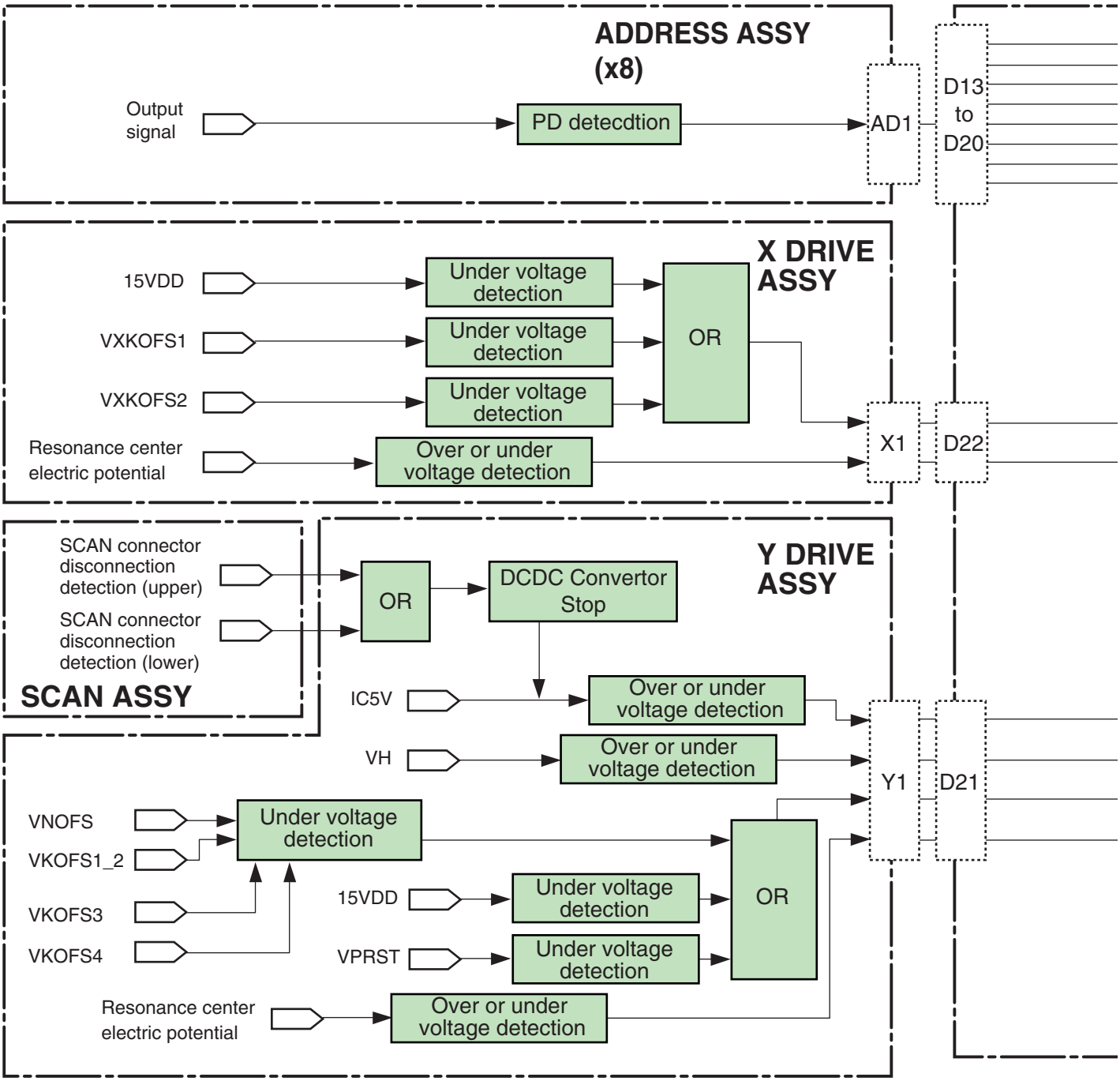
● **Waveforms**

Input signal: L/R 1 kHz, 0.5 Vrms (VOL 30)

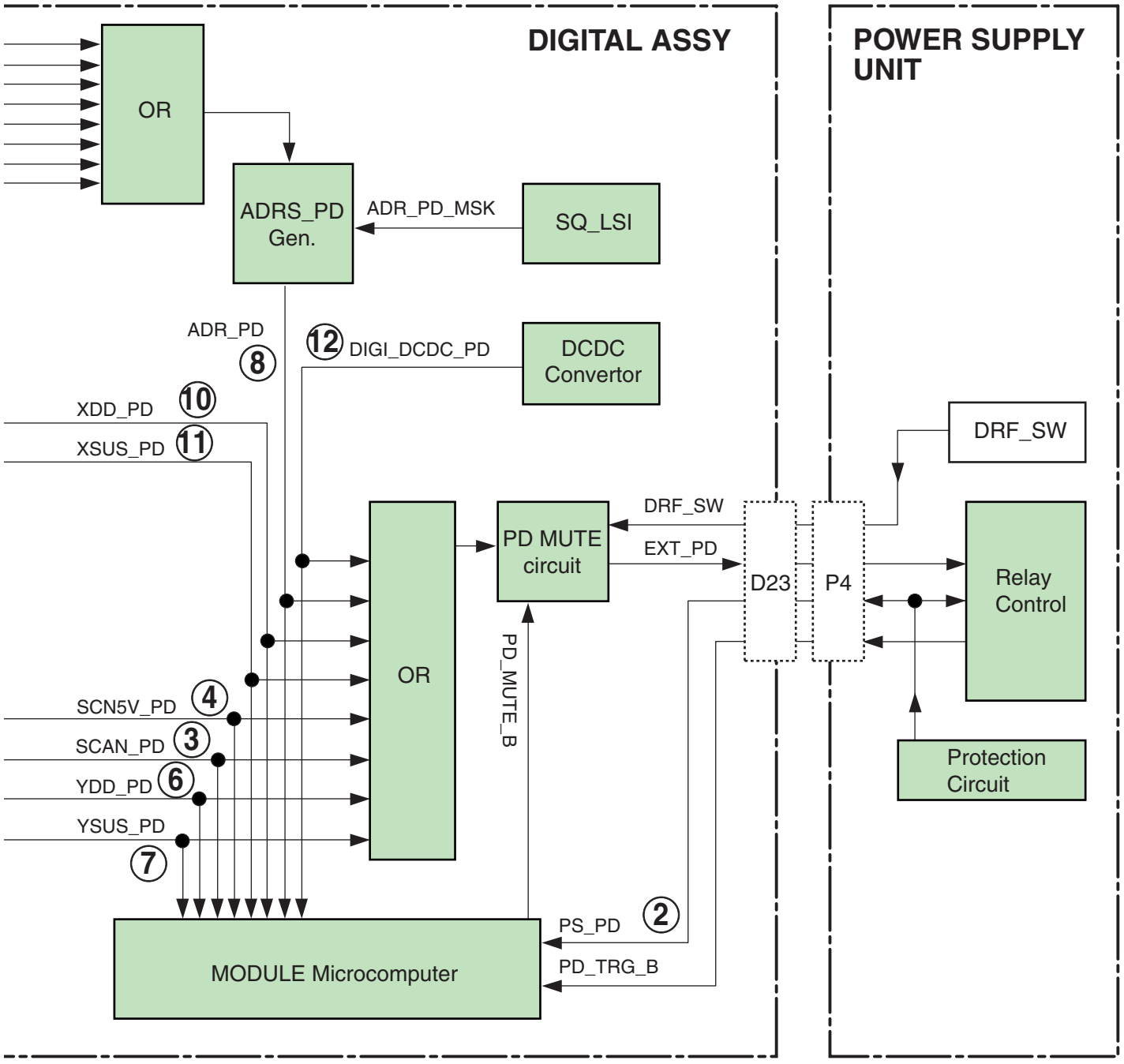
① **JA8551 - pins 1, 2** V: 2 V/div H: 1 mS/div	② **JA8551 - pins 3, 4** V: 2 V/div H: 1 mS/div	③ **IC8401 - pins 34, 38** V: 10 V/div H: 5 μS/div	④ **IC8401 - pins 46, 50** V: 10 V/div H: 5 μS/div
			
⑤ **IC8341 - pins 40, 41** V: 2 V/div H: 5 μS/div	⑥ **IC8341 - pins 42, 43** V: 2 V/div H: 5 μS/div	⑦ **IC5001 - pins 18, 19** V: 2 V/div H: 5 μS/div	⑧ **IC5001 - pins 20, 21** V: 2 V/div H: 200 nS/div
			

5.3 DIAGNOSIS OF PD (POWER-DOWN)

[1] BLOCK DIAGRAM OF THE POWER-DOWN SIGNAL



Note:
The figures ② to ⑫ indicate the number of times the Red LED flashes when power-down occurs in the corresponding route.



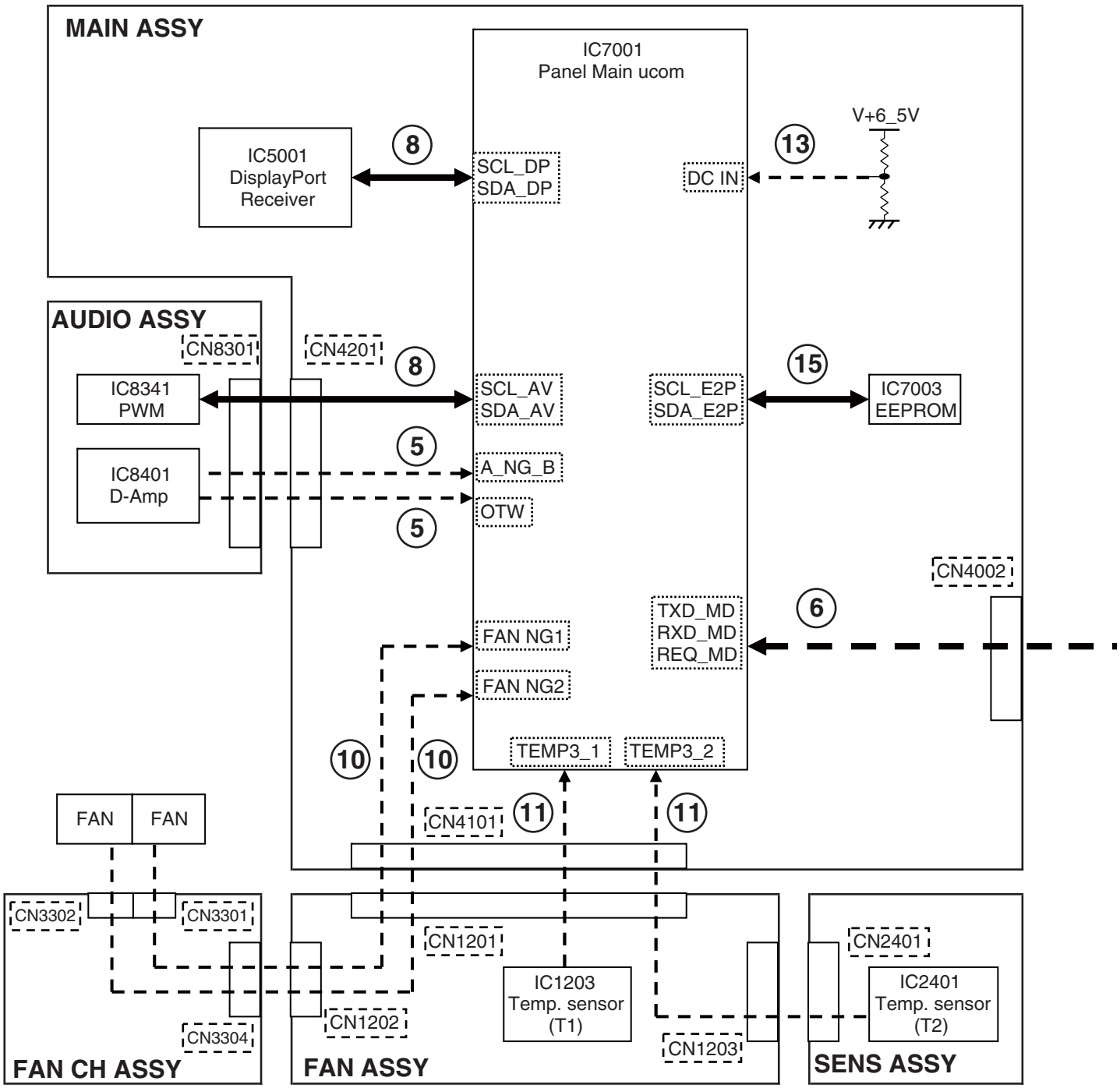
[2] PD (POWER-DOWN) DIAGNOSIS OF FAILURE ANALYSIS

Red LED Flashing Count	Factory History Display	Defective Assy	PD Outline	Checkpoint	
2	P-PWR	POWER SUPPLY Unit	Each PD in the POWER SUPPLY Unit		
			Connector disconnection	Connector [P14][P15] (60”only)	
		X DRIVE Assy	VSUS under voltage protection	X SUS block	
		Y DRIVE Assy	VSUS under voltage protection	Y SUS block	
		ADDRESS Assy	Connector disconnection	Connector [AD1]	
		DIGITAL Assy	Connector disconnection	Connector [D13] to [D20]	
3	SCAN	SCAN Assy	VH over or under voltage protection	SCAN IC	
		X DRIVE Assy		X SUS block	
		Y DRIVE Assy		Y SUS block	
				VH DC/DC	
				OFFSET block	
			Connector disconnection	Connector [Y1][Y2]	
		DIGITAL Assy	Connector disconnection	Connector [D21]	
4	SCN5V	SCAN Assy	Connector disconnection	Connector [SA1][SB1][SB2][SC1][SC2] [SD1]	
			IC5V over or under voltage protection	SCAN IC	
		Y DRIVE Assy		IC5V DC/DC	
6	Y-DCDC	Y DRIVE Assy	VNOFS under voltage protection	Y MSK block	
				NOFS block	
				VNOFS DC/DC	
			VYPRST under voltage protection	VPRST regulaotr	
				PR-U block	
			15VDD under voltage protection	15V DC/DC	
				SOFT-G block	
			VKOFS1,2 under voltage protection	Y MSK block	
				KNOFS2 block	
				VYKOFS1, 2 regulaotr	
			VKOFS3 under voltage protection	Y MSK block	
				VYKOFS3 regulaotr	
			VKOFS4 under voltage protection	Y MSK block	
				KNOFS4 block	
				VYKOFS4 regulaotr	
7	Y-SUS	Y DRIVE Assy	Over or under voltage protection of the center electric potential	Y resonance block	
		DIGITAL Assy	SQ_LSI does not operate	SEQ_LSI (Sync input, output waveform)	
8	ADRS	ADDRESS Assy	VADR under voltage protection	Address resonance block	
				TCP	
			Connector disconnection	Connector [AD1][AD2]	
		DIGITAL Assy	Connector disconnection	Connector [D13] to [D20]	
		Y DRIVE Assy	Connector disconnection	Connector [Y2][Y5][Y6]	
		X DRIVE Assy	Connector disconnection	Connector [X2][X3][X4]	
		POWER SUPPLY Unit	Connector disconnection	Connector [P1][P2]	
10	X-DCDC	X DRIVE Assy	Connector disconnection	Connector [X1][X2]	
			15VDD under voltage protection	X SUS block	
				15V DC/DC	
			VXKOFS1 under voltage protection	VXKOFS1 regulaotr	
				X OFFSET block	
			VXKOFS2 under voltage protection	VXKOFS2 regulaotr	
				X OFFSET block	
		DIGITAL Assy	Connector disconnection	Connector [D22]	
11	X-SUS	X DRIVE Assy	Over or under voltage protection of the center electric potential	X resonance block	
12	D-DCDC	DIGITAL Assy	3.3V,2.5V,1.1V	DC/DC controlo IC	
			Over voltage/under voltage/overcurrent protection	DC/DC block	
15	UNKNOW	POWER SUPPLY Unit	Connector disconnection	Connector [P4]	
		DIGITAL Assy	Connector disconnection	Connector [D23]	
			ModuleUcom can not detection	Each PD line of ModuleUcom	

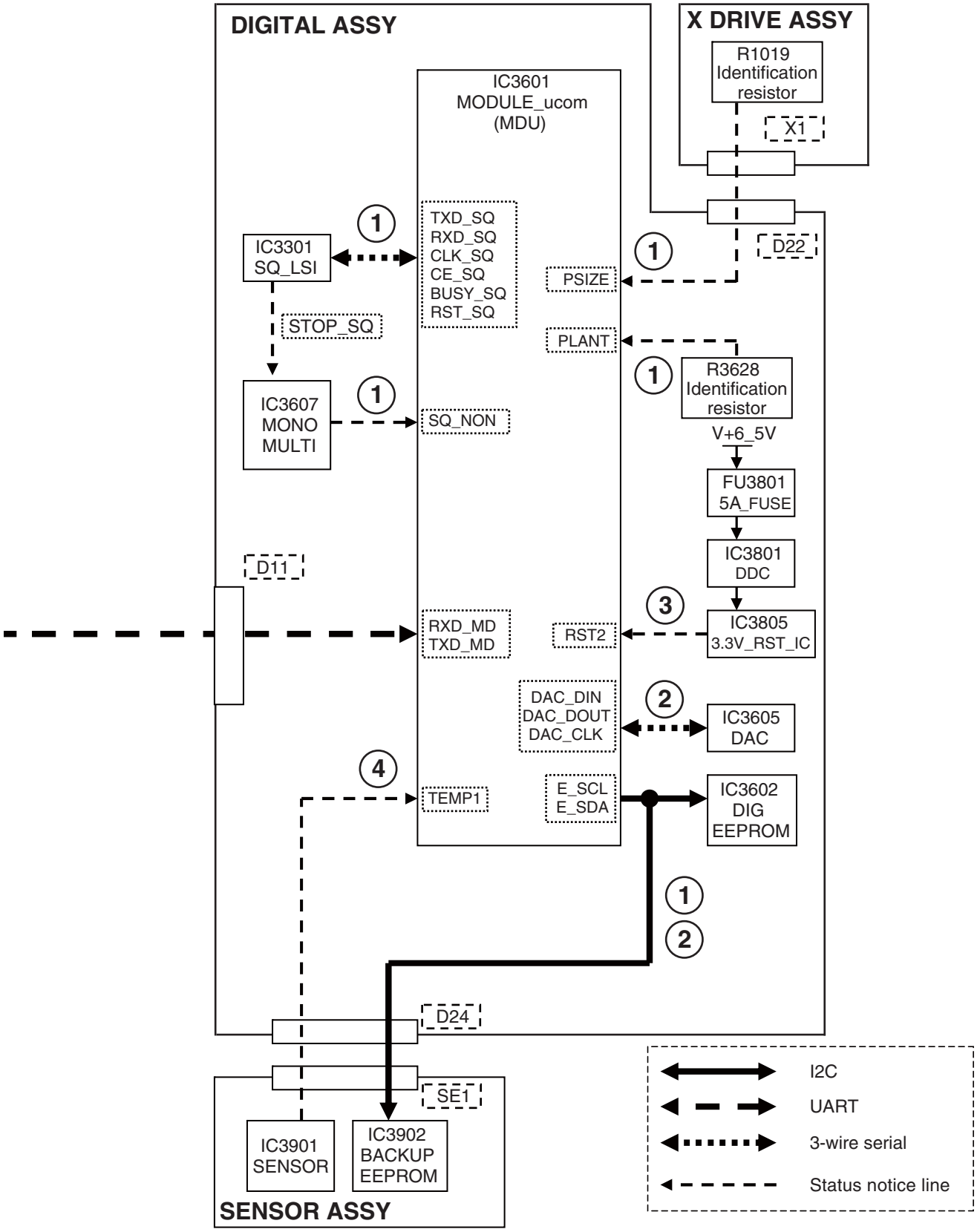
Possible Defective Part	Remarks
	The POWER SUPPLY Unit of 60 inches model is a structure of the two parts.
Q1218,Q1219,Q1221-Q1223,Q1226	VSUS-SUSOUT and SUSOUT-SUSGND are short-circuited.
Q2217-Q2224	VSUS-SUSOUT and SUSOUT-SUSGND are short-circuited.
each SCAN IC	The abnormality of the SCAN IC
Q1218,Q1219,Q1221-Q1223,Q1226	VSUS-SUSOUT and SUSOUT-SUSGND are short-circuited.
Q2217-Q2219,Q2221-Q2223	VSUS-SUSOUT and SUSOUT-SUSGND are short-circuited.
IC2601,IC2603,IC2604	
Q2401,Q2402	KNOFS1 and KNOFS3 are short-circuited.
	[SB2][SC1][SC2][SD1] are 60 inches model only.
each SCAN IC	
Q2764,D2768,R2764	
Q2321-Q2326,Q2328-Q2331,Q2333,Q2334	L MSK is short-circuited.
Q2424,Q2429	NOFS is short-circuited.
D2606,Q2709-Q2711	
Q2604,Q2605,IC2602	
Q2418	PR-U is short-circuited.
Q2662,R2669,L2301,R2335	
Q2427	SOFT-G is short-circuited.
Q2321-Q2326,Q2328-Q2331,Q2333,Q2334	L MSK is short-circuited.
Q2430	KNOFS2 is short-circuited.
Q2702,Q2705,R2714	
Q2321-Q2326,Q2328-Q2331,Q2333,Q2334	L MSK is short-circuited.
Q2703,Q2706,R2715	
Q2321-Q2326,Q2328-Q2331,Q2333,Q2334	L MSK is short-circuited.
Q2432	KNOFS4 is short-circuited.
Q2704,Q2707,R2717	
Q2106-Q2109,Q2111,Q2113,D2104-D2107	
IC3301,IC3302	The history of SD1 remains
Q1711,Q1721,Q1731,Q1741,Q1911,Q1921,Q1931,D1711,D1721,D1731,D1741,D1911,D1921,D1931	
TCP (IC1651,IC1661,IC1671,IC1681,IC1851,IC1861,IC1871)	When the TCP is damaged, replace the panel.
	Ref No. of L Assy (6 pieces) and S Assy (2 pieces) are common use.
L1201,R1217	
Q1402	
Q1405,Q1406	
Q1302,Q1304	
Q1403,Q1404	
Q1301,Q1303	
Q1108,Q1112,Q1116,Q1119	
IC3801	
Q3841,Q3861,Q3881,L3841,L3861,L3881 R3820,R3848,R3868,R3888	
	EXT_PD line : Open
	EXT_PD line : Open
	It becomes "UNKNOW" except above-mentioned PD detection condition.

5.4 DIAGNOSIS OF SD (SHUTDOWN)

[1] BLOCK DIAGRAM OF THE SHUTDOWN SIGNAL



Note : The figures ① to ⑮ indicate the number of times the Blue LED flashes when shut-down occurs in the corresponding route.



[2] SD (SHUTDOWN) DIAGNOSIS

Frequency of LED Flashing	Major Type	Detailed Type	Log Indication in Factory Mode		
			MAIN	SUB	
Blue 1	Abnormality in the Sequence LSI	Communication error	SQ-LSI	RTRY	
		Drive stop		SQNO	
		Busy		BUSY	
		Version mismatching (hardware, software)		VER-HS	
		Version mismatching (hardware, backup memory)		VER-HM	
		Version mismatching (hardware, DIGITAL memory)		VER-HI	
Blue 2	Failure in module microcomputer device communication	Digital EEPROM	MD-DEV	EEPROM	
		Backup EEPROM		BACKUP	
		DAC IC		DAC	
Blue 3	Abnormality in RST2 power decrease	–	RST2	–	
Blue 4	Abnormality in panel temperature	Abnormality in high temperature	TMP-NG	TMP-H	
		Abnormality in low temperature		TMP-L	
Blue 5	Short-circuiting of the speakers D-AMP temperature abnormality	–	AUDIO	AUDIO	
				OTW	
Blue 6	Failure in communication with the module microcomputer	–	MODULE	–	
Blue 8	Failure in IIC communication with the panel main microcomputer	Display Port Rx	PM-IIC	DP-RX	
		PWM Processor		PWM	
Blue 10	Abnormality in FAN	FAN1	P-FAN	FAN1	
		FAN2		FAN2	
Blue 11	High temperature of the unit	T1 (for outside)	TEMP3	T1	
		T2 (for inside)		T2	
Blue 13	Failure in the power supply of the MAIN Assy	Vcc power decrease of the MAIN Assy	MB-POW	RELAY	
Blue 15	Failure in communication with the EEPROM of the panel main microcomputer	–	–	–	

Checkpoint	Possible Defective Part	Remarks
Communication line between MDU and SQ_LSI	IC3601/IC3301	SQ_IC communication not established. IC3301 may not have properly started up.
Drive detectig signal of MDU (SQ_NON)	CN3201/IC3601/ IC3301/IC3607	A shutdown occurs if the drive waveform periodically does not output. (When SQ_NON of MDU input is High, a shutdown is generated.)
Communication line between MDU and SQ_LSI (BUSY_SQ)	IC3601/IC3301	If BUSY_SQ remains high, a shutdown is generated.
Check the DIGITAL Assy and the software version of SEQ and the destination of the panel. Check the connection between [X1] and [D22].	IC3601/IC3301	When the identification resistor of PSIZE/PLANT and software version of SEQ are incoherent, a shutdown occurs.
Check the DIGITAL Assy and the software version of SEQ and the destination of the panel. Check the connections between [X1] and [D22], and [SE1] and [D24]. Communication line between MDU and BACKUP EEPROM	IC3601/ SENSOR Assy(IC3902)	When the identification resistor of PSIZE/PLANT and stored content of EEPROM on the SENSOR Assy are incoherent, a shutdown occurs.
Check the DIGITAL Assy and the software version of SEQ and the destination of the panel. Check the connections between [X1] and [D22]. Communication line between MDU and DIG EEPROM	IC3601/IC3602	When the identification resistor of PSIZE/PLANT and stored content of EEPROM on the DIGITAL Assy are incoherent, a shutdown occurs.
Communication line between MDU and DIG EEPROM	IC3601/IC3602	
Communication line between MDU and BACKUP EEPROM	IC3601/SENSOR Assy(IC3902)	
Communication line between MDU and DAC	IC3601/IC3605	
3.3 V output (TP3881) of DDC	IC3801/IC3805	If RST2 does not become high after the unit is turned on, a shutdown will be generated in several seconds.
V+6.5V of POWER SUPPLY Unit (Check [D25][P4]) FU3801 has melted.	POWER SUPPLY Unit, FU3801	Check if V + 6_5 V is started. Also check if the FU3801 on the DIGITAL Assy has been melted.
Installation environment	SENSOR Assy (IC3901)	If TEMP1 that is read by the module microcomputer is 85 °C or higher, a shutdown will be generated.
Installation environment Check the connection between [SE1] and [D24].	SENSOR Assy (IC3901)	If TEMP1 that is read by the module microcomputer is –20 °C or less, a shutdown will be generated. Also check the connection between SE1 and D24.
Speaker terminals	JA8551	Check if any speaker cable is in contact with the chassis.
D_AMP	IC8401	Check if the AMP output is short-circuited.
6.5 V power supply for AUDIO Assy	R4203	Check that V+6_5 V is activated in the AUDIO Assy. If it is not, check if R4203 on the MAIN Assy is open.
Periphery of the cable between MAIN and AUDIO, and POWER SUPPLY and AUDIO Assys	CN4201,CN8301, CN8302	Check if cables are firmly connected.
D_AMP	IC8401	Check the temperature of D_AMP IC that is 125 °C or higher.
Communication line between main ucom and module ucom	IC7001,IC3601	Check the communication lines (TXD_MD/RXD_MD/REQ_MD).
Periphery of the cable between MAIN and DIGITAL Assys	CN4002,CN3201	Check if cables are firmly connected.
Communication line between main ucom and DisplayPort Rx	IC7001,IC5001	Check the communication lines (SCL_DP/SDA_DP).
Communication line between main ucom and PWM processor	IC7001,IC8341	Check the communication lines (SCL_AV/SDA_AV).
Periphery of the 3.3 V regulator for IC	IC8331	Check that the voltage outputs it.
Periphery of the cable between MAIN and AUDIO Assys	CN4201,CN8301	Check if cables are firmly connected.
Dirt attached to the fan motor		Check the fan. (SD10 does not detect it at the temperature that fans do not turn.)
Periphery of the cable between MAIN and FAN Assys	CN4101,CN1201	Check if cables are firmly connected.
Periphery of the cable between FAN and FAN CH Assys	CN1202,CN3304	Check if cables are firmly connected.
Periphery of the cable between FAN CH Assy and Fan motor	CN3302	Check if cables are firmly connected.
Periphery of the fan control regulator	IC1202	Check that the voltage outputs it.
Dirt attached to the fan motor		Check the fan. (SD10 does not detect it at the temperature that fans do not turn.)
Periphery of the cable between MAIN and FAN Assys	CN4101,CN1201	Check if cables are firmly connected.
Periphery of the cable between FAN and FAN CH Assys	CN1202,CN3304	Check if cables are firmly connected.
Periphery of the cable between FAN CH Assy and Fan motor	CN3301	Check if cables are firmly connected.
Periphery of the fan control regulator	IC1201	Check that the voltage outputs it.
Ambient temperature of the panel section and temp. sensor	IC1203	Shutdown occurs if the periphery of IC1203 (temp. sensor) is high temperature.
Periphery of the cable between MAIN and FAN Assys	CN4101,CN1201	Check if cables are firmly connected.
Periphery of the cable between FAN and SENS Assys	CN1203,CN2401	Check if cables are firmly connected.
6.5 V power supply of the MAIN Assy	CN4502	Check if V + 6_5 V is started.
Communication line between main ucom and EEPROM	IC7001, IC7003	Check the communcation lines (SCL_E2P/SDA_E2P)

5.5 NON-FAILURE INFORMATION

[1] FUNCTION OF DECREASING THE BRIGHTNESS LEVEL

If the panel temperature becomes high or a video signal that requires activation of panel protection is input, the unit will protect the panel by decreasing the brightness level.
* While a mask is being displayed, the panel protection function will not be activated.

Protection Function Name	Purpose	Conditions	Protection Function	Remarks
High-temperature protection function 1	For protection of parts (DCF)	Panel temperature (TEMP1) reaches 65 ºC.	Offsetting the ABL adjustment value	
High-temperature protection function 2	For reducing heating in the unit	Panel temperature (TEMP1) reaches 80 ºC.	Limiting for the maximum number of SUS pulses	
Panel protection function 1	For preventing burn-in	A still image is displayed for 3 minutes or more.	Limiting for the maximum number of SUS pulses	The picture will be considered to be still if only the mouse cursor is moved.
Panel protection function 2	For protection of SCAN ICs	An image with which a particular load is applied to one SCAN IC is displayed. (See Fig. 2)	Limiting for the maximum number of SUS pulses	
Panel protection function 3	For protection against panel cracking	An image with which the heat of part in the panel is increased is displayed. (See Fig. 3)	Limiting for the maximum number of SUS pulses	

■ Limiting for the maximum number of SUS pulses

By gradually decreasing the limit for the maximum number of SUS pulses, the temperature of the panel will be lowered.
- The limit for the maximum number of SUS pulses will be decreased by 8 per 5 seconds.
- The lower limit for the maximum number of SUS pulses is about 700.
- The maximum number of SUS pulses will begin to increase gradually if the conditions that led to activation of the protection function return to normal.

■ ABL adjustment value offset

By gradually offsetting the ABL adjustment value, the temperature of the panel will be lowered. The number of SUS pulses, which is determined based on the input APL (average picture level), will be decreased.
- The ABL adjustment value will be offset by one step per 30 seconds.
- The ABL adjustment value will be gradually restored if conditions that let to activation of the protection function return to normal.

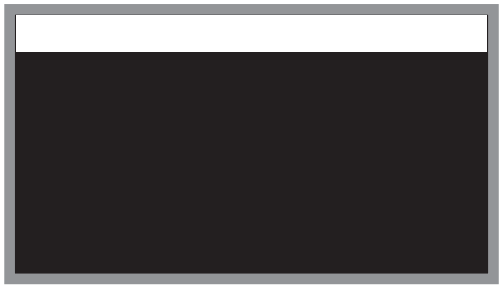


Fig. 2: Detection example: SCAN IC protection

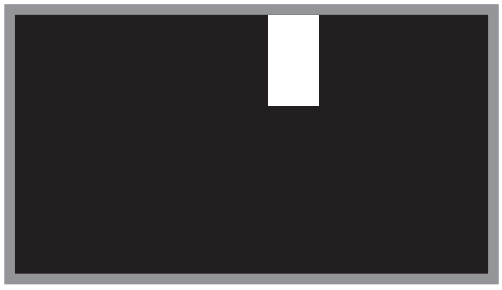


Fig. 3: Detection example: Protection against panel cracking

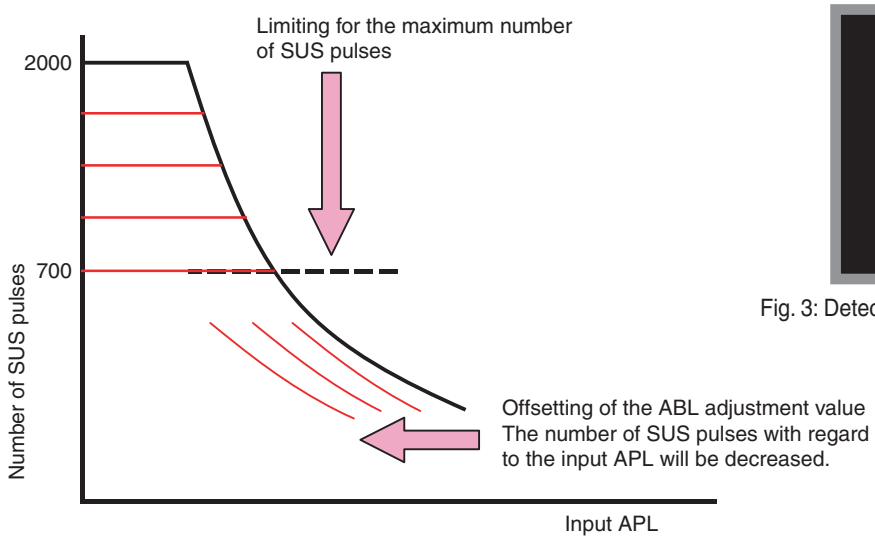

Limiting for the maximum number of SUS pulses
2000
700
Number of SUS pulses
Offsetting of the ABL adjustment value
The number of SUS pulses with regard to the input APL will be decreased.
Input APL

Fig. 1: Relationship between input APL and number of SUS pulses

5.6 OUTLINE OF THE OPERATION

[1] PANEL DRIVE-POWER ON/OFF FUNCTION

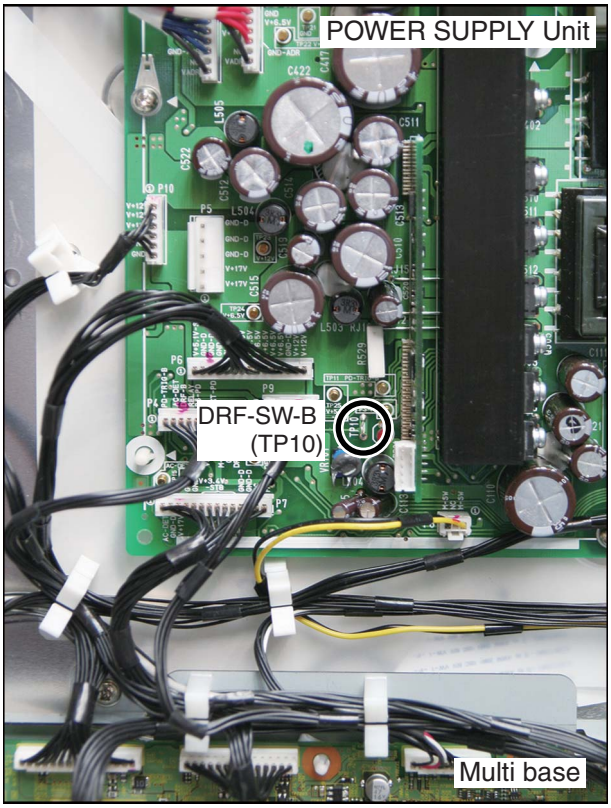
Function:
It is an operational mode where the digital signal processing performs circuit operation but the power is not supplied to the panel driving system (Vsus, VAddress) in order to avoid a power down (PD).

Application:
1. When it is necessary to check whether the signal output is correctly reaching the drive system in a repairing activity etc.
2. In the case of a PD, to determine whether the problem is with the panel drive-power supply or with the other system power supply.

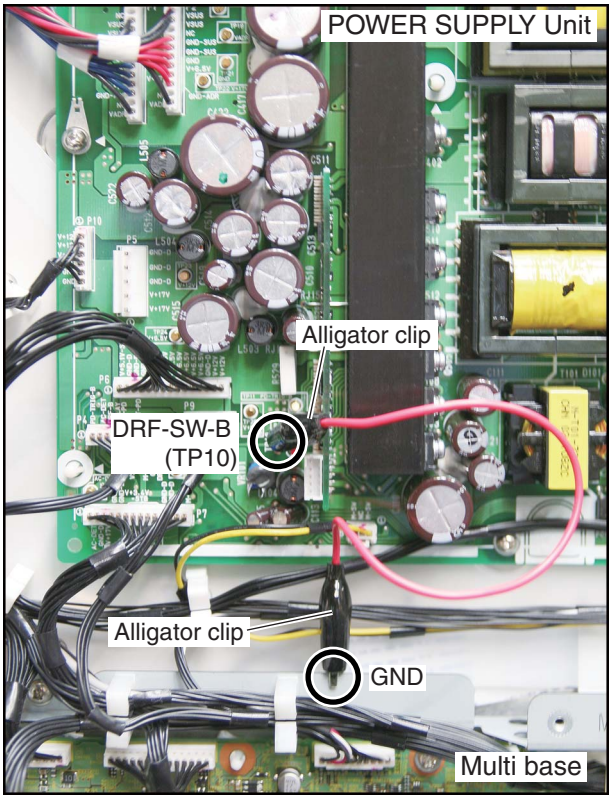
Method:
1. Short-circuit between the specified location of the POWER SUPPLY Unit and GND (Multi base section recommended), using a jumper with alligator clips (refer to the photos below).
2. Execute [DRV S00] by RS-232C command. ([DRV S01] for release)

Supplemental explanation:
- When the panel drive-power is in OFF state, there will be no PD, except PS_PD, as the PD signal has been muted.
- If the clip is removed in the OFF state of the panel drive-power, PD will take place at the instance of clip removal. Therefore, be sure to remove the clip after turning the power OFF.
- Under RS-232C command control, [DRV S01] (release) is possible during power ON. However, there is a possibility of damaging the set. Therefore, make this operation only after turning the power OFF.
- Command [DRV S00/S01] is effective even during standby.
- Setting with RS-232C commands or the remote control unit is enabled during Standby mode. However, if the unit is left unoperated for about 10 seconds in Standby mode after setting with RS-232C commands or the remote control unit is completed, the setting will become void.
- When the main power switch is set to OFF, no command is accepted.
- Setting with RS-232C commands or the remote control unit will become void if the AC power cord is unplugged, the main power switch is set to OFF, or the unit is left unoperated for about 10 seconds in Standby mode.

When the panel drive-power is ON



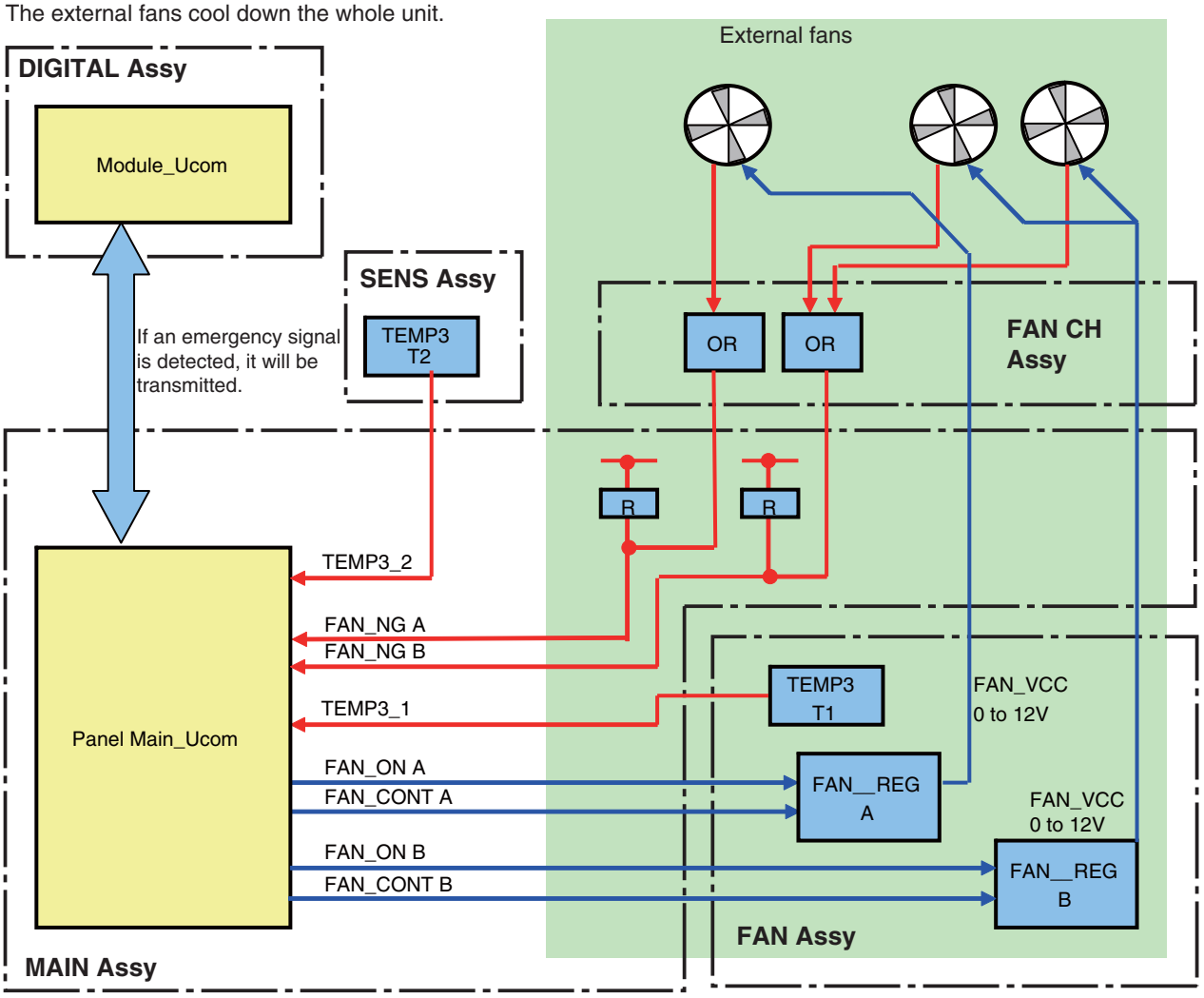
When the panel drive-power is OFF



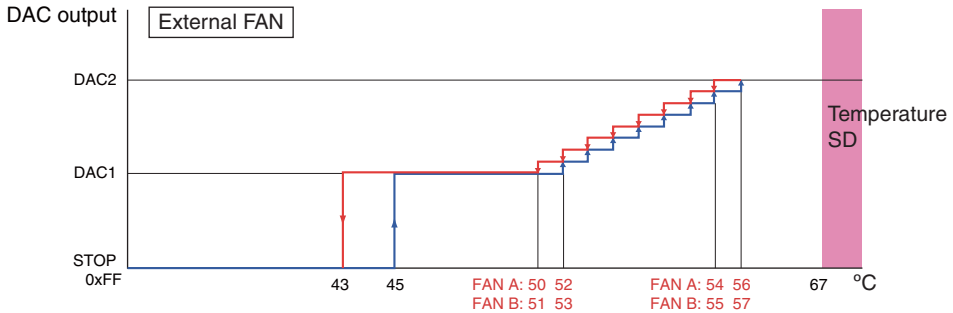
[2] SPECIFICATION OF THE FAN CONTROL

■ Block diagram

The external fans cool down the whole unit.



■ Operation specifications



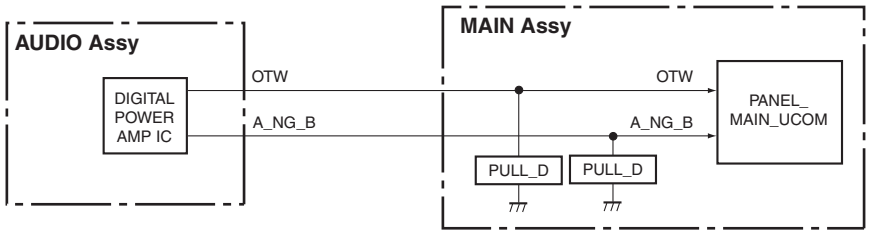
Notes:

- The operating temperature of the fan is higher than the ambient temperature, because the sensor temperature is read by the microcomputer.
- If the critical values for signals are displayed in the address circuit, the fan may be activated or be rotated at higher speed in response to values lower than the set temperature values shown above.
- Depending on the ventilation conditions behind the unit, the fan may be activated or be rotated at higher speed in response to values lower than the set temperature values shown above.
- When the temperature rises, the sensor voltage of TEMP3 increases.
- When the voltage of the DAC output from the Panel Main microcomputer decreases, rotation speed of the fan rises.
- Normally, the T1 temperature sensor output is used to control the fan.
  The T2 sensor detects the temperature inside the unit and assists T1.

[3] PROCESSING IN ABNORMALITY

Speaker short-circuit

● Circuit configuration



● Specifications for port monitoring

Port Name	SD/PD Indication	Determination Condition	Monitoring conditions	Operation
A_NG_B	AUDIO	Shutdown occurs when the signal is "L." 30 mS × 10 times	DC_IN = "H" (always) (Monitoring starts 2 sec after the above conditions are established.)	The main CPU operations described below will be performed when either "A_NG_B = L" or "OTW = L" is detected (established) under the monitoring conditions.
OTW	AUDIO	Shutdown occurs when the signal is "L." 120 mS × 3 times		

● Operation specifications of the main CPU

(1) Establish the short-circuit of the speaker by the main CPU
- After a warning indication is displayed for 5 sec, a shutdown is generated (the blue LED flashes 5 times).
- A warning indication is displayed for all input-signal types.
- Example of a warning indication: "The speaker terminals are short-circuited. After reconnection, turn the unit on again."

(2) Display conditions
When the panel is on: A warning indication is displayed immediately.
When the panel is off: A warning indication is not displayed immediately but is displayed when the panel is turned on.

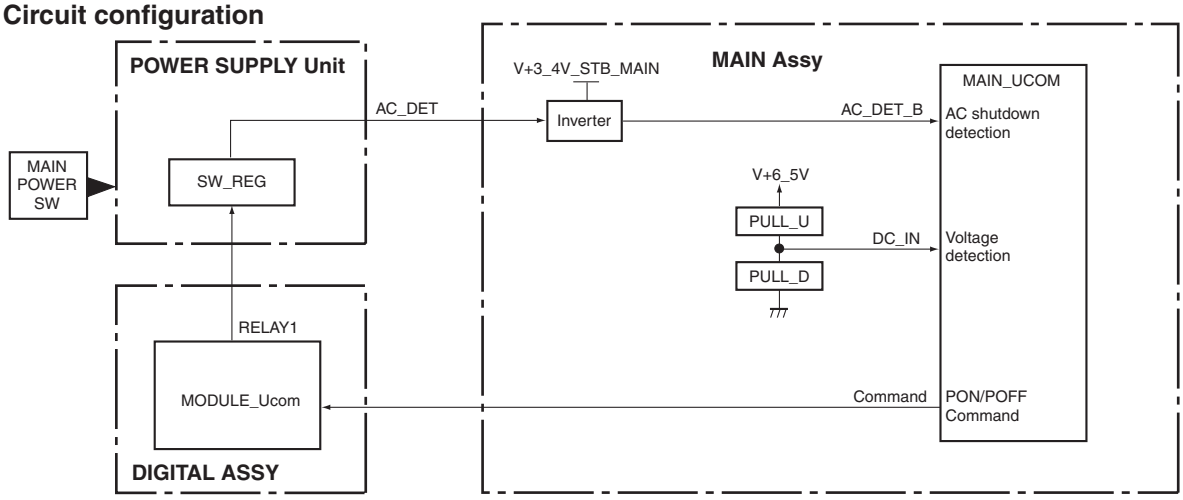
Note: A warning indication is displayed each time the panel is turned on if the conditions for a shutdown persist.

● Conditions for resetting the circuits

The circuits will be reset upon Standby ON/OFF.

Power supply

● Circuit configuration

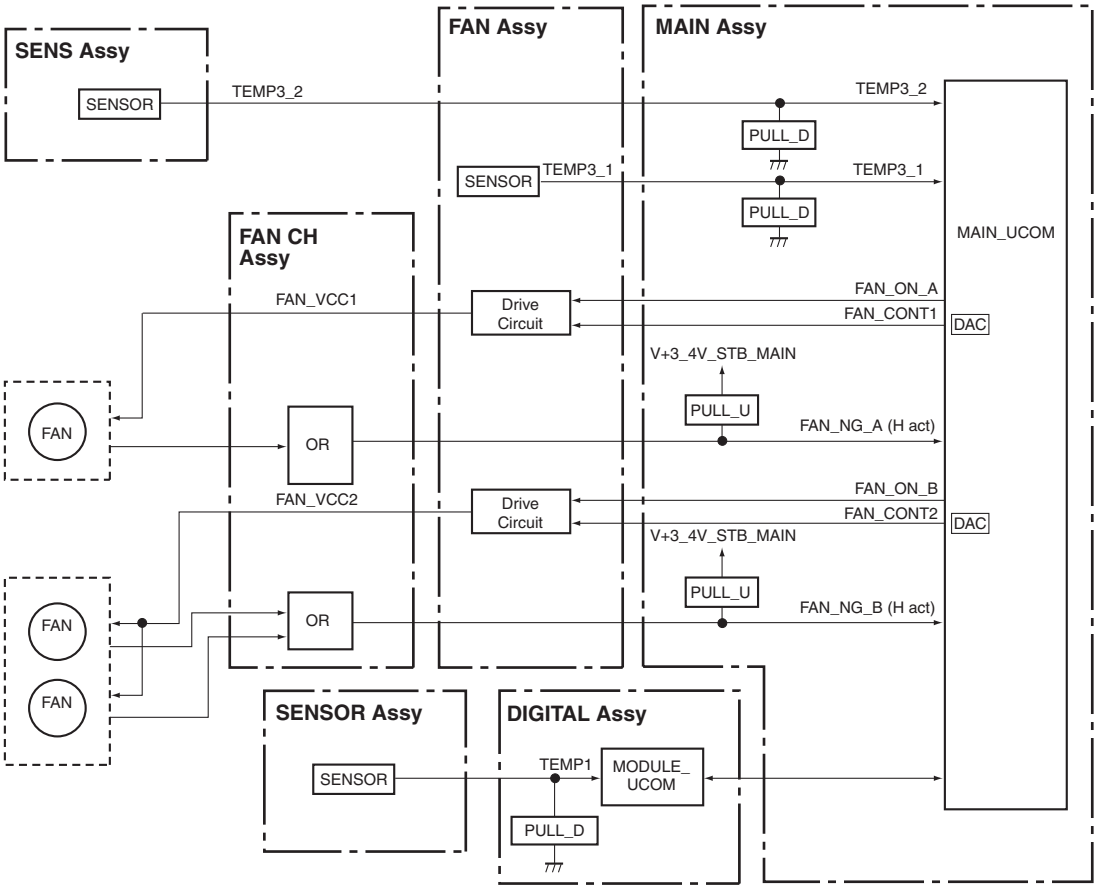


● Specifications for port monitoring

Port Name	SD/PD Indication	Determination Condition	Monitoring conditions	Operation
DC_IN	PANEL MAIN power (MB-POW)	If the signal to DC IN does not become H within 5 seconds after the PON command is issued, the unit will shut itself off.	• During panel screen ON	Shutdown occurs immediately Blue LED flashes 13 times

Fan and temperature sensor

● Circuit configuration



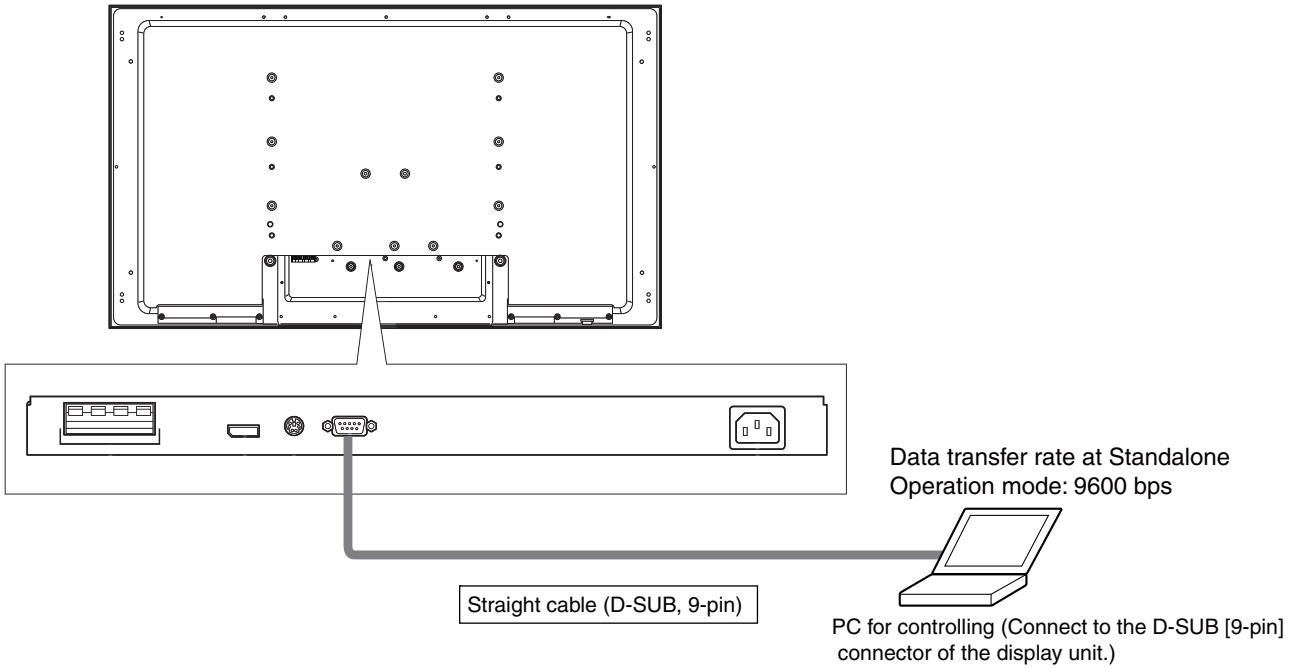
● Specifications for port monitoring

Port Name	SD/PD Indication	Determination Condition	Monitoring conditions	Operation
FAN_NG_A FAN_NG_B	FAN	Shutdown occurs when the signal is "H." 1 S ∗ 15 times	DC_IN = H and FAN_ON_A = H (Monitoring starts 3 sec after the above conditions are established.)	Shutdown occurs immediately Blue LED flashes 10 times
TEMP1	Panel temperature is high	Shutdown occurs if any values equal to or greater than minimum to require a shutdown are detected. 200 mS ∗ 5 times	Digital video RST2 = H	Shutdown occurs after waiting for 30 sec. Blue LED flashes 4 times
	Panel temperature is low			Shutdown occurs after waiting for 3 sec. Blue LED flashes 4 times
TEMP3_1	Ambient temperature of the display	Shutdown occurs if any values equal to or greater than minimum to require a shutdown are detected. 1 S ∗ 3 times	DC_IN = H (Monitoring starts 1 sec after the above conditions are established.)	In the Panel screen ON: Shutdown occurs after the warning indication is displayed for 30 sec. Blue LED flashes 11 times
TEMP3_2	Inside temperature of the display	Shutdown occurs if any values equal to or greater than minimum to require a shutdown are detected. 1 S ∗ 3 times	DC_IN = H (Monitoring starts 1 sec after the above conditions are established.)	In the Panel screen ON: Shutdown occurs after the warning indication is displayed for 30 sec. Blue LED flashes 11 times

[4] Standalone Operation Mode

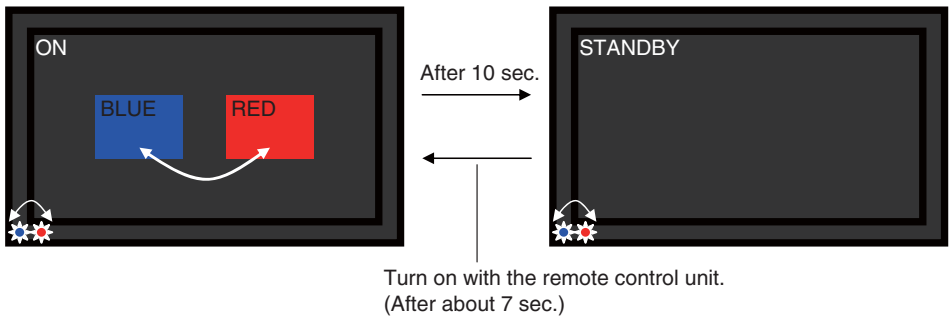
Standalone Operation mode is available with the KRP-600P and KRP-500P, by issuing the RS-232C command shown below. After disconnecting the system cable, connect an RS-232C cable to the display unit to issue a command.

SYSS00: Standalone Operation mode
SYSS01: System Operation mode


Data transfer rate at Standalone Operation mode: 9600 bps
Straight cable (D-SUB, 9-pin)
PC for controlling (Connect to the D-SUB [9-pin] connector of the display unit.)

Notes:

- To update the software for the display, disconnect the system cable, connect an RS-232C cable (straight), then perform updating.
- During System Operation mode, most of the RS-232C commands are invalid.
- The setting data during Standalone Operation mode immediately before the display is turned off will be stored in memory. After finishing operation in Standalone Operation mode, be sure to issue the SYSS01 command to return the display to System Operation mode before reconnecting it to the MR. If the display is connected to the MR without returning it to System Operation mode, the MR will automatically enter Standby mode soon after it is turned on, in which case no image will be displayed even though the display is turned on.
- No audio nor video signals are output if any display port cable other than the one for this display is connected to its system cable port (terminal). The mask signal (output in response to a mask command) is the only video output available during Standalone Operation mode.
- During normal System Operation mode (SYSS01) the display monitors the connection status with the MR. If communication between the MR and the display cannot be established for any reason, such as disconnection of the system cable or MR's AC power being off, a system error warning will be indicated with the LED and on the mask screen for about 10 seconds, after which the display will automatically shut itself off. (Even after power-off, flashing of the LED for warning continues.)



KRP-500P

5.7 OUTLINE OF RS-232C COMMAND

[1] PREPARED TOOLS

It is necessary to prepare the following one to use 232C command.
- PC
- Application for control
- 232C cable (straight)

∗ The setting of the Com port cannot be communicated if it doesn't do correctly.
(Please follow a set explanation of PC in the Com port)

[2] USING RS-232C COMMANDS

Issue the SYSS00 command to set the unit to Standalone Operation mode.

5.8 LIST OF RS-232C COMMANDS

Note: While the display is in System Operation mode (SYSS01) with the Media Receiver (MR,) among the received commands via the RS-232C connector on the display, only the SYS commands are valid.
To enable other RS-232C commands, set the display to Standalone Operation mode (SYSS00).

■ RS-232C command list

Command		Function	Command Receiving UCOM		Last Memory	Effective only during FAY	Remarks
			MOD	PM			
A							
ABL	***	To adjust the upper limit of power	●		MOD	●	
ALM	S00	To enable SD operation of the display main unit		●	PM		
	S01	To disable SD operation of the display main unit		●	PM		
AP0	S**	Addresses L1 and L2 setting	●		MOD	●	For enabling changed setting, it is necessary to turn the unit off then back on again.
AP1	S**	Addresses L3 and L4 setting	●		MOD	●	
AP2	S**	Addresses U1 and U2 setting	●		MOD	●	
AP3	S**	Addresses U3 and U4 setting	●		MOD	●	
APN	***	Average number of pulses for 1V	●		MOD	●	
AMP	S00	To set audio muting to OFF		●			
	S01	To set audio muting to ON		●			
B							
BCP		To copy EEPROM data for backup	●		MOD	●	
BRA	S01	To set the baud rate for the RS-232C connector on the panel to 1200 bps		●	PM		Corresponding to reception via the RS-232C connector on the display
	S02	To set the baud rate for the RS-232C connector on the panel to 2400 bps		●	PM		
	S03	To set the baud rate for the RS-232C connector on the panel to 4800 bps		●	PM		
	S04	To set the baud rate for the RS-232C connector on the panel to 9600 bps		●	PM		
BSM	S00	Afterimage/Burn-In Reduction mode: OFF	●				
	S01	Afterimage/Burn-In Reduction mode: ON	●				
BZS	S00	Bezel Setup: EP		●	PM		For use by engineers
	S01	Bezel Setup: R1 (Black)		●	PM		
	S02	Bezel Setup: R2 (White)		●	PM		
	S03	Bezel Setup: R3 (Beige)		●	PM		
C							
CAL		To clear the NG (SD) history managed by the Panel Main microcomputer		●	PM	●	
CBU		To set Backup setting to “No backup”	●		MOD	●	
CHM		To clear hour-meter data	●		MOD	●	
CMT		To clear stored maximum-temperature data	●		MOD	●	
CPC		To clear the power-on count	●		MOD	●	
CPD		To clear the power-down history	●		MOD	●	
CPM		To clear pulse-meter data	●		MOD	●	
CSD		To clear the shutdown history of the DIGITAL Assy of the display unit	●		MOD	●	
CSF	S00	Color sensor function: OFF	●				
	S01	Color sensor function: ON	●				
CSM	S01	Color Space mode 1: Pioneer original standard	●				
	S02	Color Space mode 2: In compliance with the EBU standard	●				
CSB	***	Color sensor blue coefficient	●		MOD	●	
CSG	***	Color sensor green coefficient	●		MOD	●	
CSR	***	Color sensor red coefficient	●		MOD	●	
CTP	S00	Color temperature setting: OFF	●				
	S01	Color temperature setting: LOW	●				
	S02	Color temperature setting: MID LOW	●				
	S03	Color temperature setting: MID	●				
	S04	Color temperature setting: MID HIGH	●				
	S05	Color temperature setting: HIGH	●				
D							
DIZ	S00	Dither/L dither: OFF, noise: OFF	●			●	
	S01	Dither/L dither: ON, noise: ON	●			●	
	S02	Dither/L dither: OFF, noise: ON	●			●	
	S03	Dither/L dither: ON, noise: OFF	●			●	
DRV	S00	Panel drive-power: OFF	●				
	S01	Panel drive-power: ON	●				

Command		Function	Command Receiving UCOM		Last Memory	Effective only during FAY	Remarks
			MOD	PM			
F							
FAJ		To set the flag for DIGITAL Assy adjustment to “Adjusted”	●		MOD	●	
FAN		Factory mode: OFF	●	●		●	
FAY		Factory mode: ON	●	●			
FBM	S00	OFF (disabling in-phase SUS drive)	●		MOD	●	For enabling changed setting, it is necessary to turn the unit off then back on again.
	S01	MODE 1 (enabling in-phase SUS drive)	●		MOD	●	
FCP	S00	To cancel Panel FAN Control mode (Normal mode)		●	PM	●	
	S01	To set to Panel FAN Control MAX mode		●	PM	●	
	S02	To set to Panel FAN Control MIN mode		●	PM	●	
	S03	To set to Panel FAN Control STOP mode		●	PM	●	
FSP		To set the Panel main microcomputer to factory-preset values		●	PM	●	
L							
LED	S00	Display front indicators: All unlit		●		●	Corresponding to reception via the RS-232C connector on the display
	S02	Display front indicators: Normal operation		●		●	
	S10	Display front indicators: ON lit		●		●	
	S11	Display front indicators: STANDBY lit		●		●	
M							
MIR	S00	Mirror indication mode: OFF	●				
	S01	Mirror indication mode: Flip horizontal	●				
	S02	Mirror indication mode: Flip vertical	●				
	S03	Mirror indication mode: Flip horizontal and vertical	●				
MKC	S00	MASK OFF	●		MOD		
	S01	H RAMP (Slant 1) M	●		MOD	●	
	S02	H RAMP (Slant 4) M	●		MOD	●	
	S03	Slanting ramp M	●		MOD	●	
	S04	30 for aging	●		MOD	●	
	S05	05 for aging	●		MOD	●	
	S06	Afterimage wiping 1	●		MOD	●	
	S07	Afterimage wiping 2	●		MOD	●	
	S08	White (luminance change)	●		MOD	●	
	S09	Peak detection raster	●		MOD	●	
	S10	Address-lack check	●		MOD	●	
	S11	To scroll vertical green lines	●		MOD	●	
	S12	To scroll horizontal green lines	●		MOD	●	
	S13	To scroll vertical ramp vertically (white)	●		MOD	●	
	S14	To scroll vertical ramp vertically (green)	●		MOD	●	
	S15	To scroll horizontal ramp horizontally (white)	●		MOD	●	
	S16	To scroll horizontal ramp horizontally (green)	●		MOD	●	
	S17	Crosshatch + Window	●		MOD	●	
MKS	S00	MASK OFF	●		MOD		
	S01	H RAMP (Slant 1)	●		MOD	●	
	S02	H RAMP (Slant 4)	●		MOD	●	
	S03	V RAMP (Slant 1)	●		MOD	●	
	S04	Slanting ramp	●		MOD	●	
	S05	Window (Hi= 870, Lo= 102)	●		MOD	●	
	S06	Window (Hi= 1023, Lo= 102)	●		MOD	●	
	S07	Window (Hi= 1023, Lo= 000)	●		MOD	●	
	S08	Window (Hi= 1023) 4%	●		MOD	●	
	S09	Window (Hi= 1023) 1.25%	●		MOD	●	
	S10	Window (1/7LINE)	●		MOD	●	
	S11	STRIPE (MGT/GRN)	●		MOD	●	
	S12	STRIPE (GRN/MGT)	●		MOD	●	
	S13	Checker in monochrome (1 line)	●		MOD	●	
	S14	Checker in monochrome (2 lines)	●		MOD	●	
	S15	Checker in monochrome (4 lines)	●		MOD	●	
	S16	Checker in monochrome (8 lines)	●		MOD	●	
	S17	COLOR BAR	●		MOD	●	
	S18	Slanting lines	●		MOD	●	
	S19	Checker in black and red (1 line)	●		MOD	●	
	S20	Checker in black and red (2 lines)	●		MOD	●	

Command		Function	Command Receiving UCOM		Last Memory	Effective only during FAY	Remarks
			MOD	PM			
M							
MKS	S21	Checker in black and red (4 lines)	●		MOD	●	
	S22	Checker in black and red (8 lines)	●		MOD	●	
	S23	Afterimage wiping (RGB zigzag, V reverse)	●		MOD	●	
	S24	Black raster (maximum pulse count)	●		MOD	●	Change of the Peak Brightness Detection function (PKD) impossible
	S25	1 for perfect linear	●		MOD	●	
	S26	2 for perfect linear	●		MOD	●	
	S27	3 for perfect linear	●		MOD	●	
	S28	4 for perfect linear	●		MOD	●	
	S29	RGB checker 1	●		MOD	●	
	S30	RGB checker 2	●		MOD	●	
	S31	Window RED (RED= 1023)	●		MOD	●	
	S32	Window GREEN (GREEN= 1023)	●		MOD	●	
	S33	Window BLUE (BLUE= 1023)	●		MOD	●	
	S34	Horizontal stripes for even-numbered lines	●		MOD	●	
	S35	Horizontal stripes for odd-numbered lines	●		MOD	●	
	S36	Afterimage test 1	●		MOD	●	
	S37	Afterimage test 2	●		MOD	●	
	S38	Afterimage test 3	●		MOD	●	
	S39	Afterimage test 4	●		MOD	●	
	S40	Slanting ramp in Red only	●		MOD	●	
	S41	Slanting ramp in Green only	●		MOD	●	
	S42	Slanting ramp in Blue only	●		MOD	●	
	S43	1 for checking lighting of the display	●		MOD	●	
	S44	2 for checking lighting of the display	●		MOD	●	
	S45	5 for perfect linear	●		MOD	●	
	S46	6 for perfect linear	●		MOD	●	
	S47	7 for perfect linear	●		MOD	●	
	S48	8 for perfect linear	●		MOD	●	
	S49	Mask for ABL adjustment	●		MOD	●	
MKR	S00	MASK OFF	●		MOD		
	S01	Raster - White	●		MOD	●	
	S02	Raster - Red	●		MOD	●	
	S03	Raster - Green	●		MOD	●	
	S04	Raster - Blue	●		MOD	●	
	S05	Raster - Black	●		MOD	●	
	S06	Raster - Cyan	●		MOD	●	
	S07	Raster - Magenta	●		MOD	●	
	S08	Raster - Yellow	●		MOD	●	
	S09	Raster - Pink	●		MOD	●	
	S10	Raster - Yolk-colored	●		MOD	●	
	S11	Raster - Light blue	●		MOD	●	
	S12	Raster - Beige	●		MOD	●	
	S13	Raster - Yellow green	●		MOD	●	
	S14	Raster - Cyan 120	●		MOD	●	
	S15	Raster - Magenta 120	●		MOD	●	
	S16	Raster - Yellow 120	●		MOD	●	
	S17	Raster - Gray 120	●		MOD	●	
	S18	Raster - Red 626	●		MOD	●	
	S19	Raster - Green 626	●		MOD	●	
	S20	Raster - Blue 626	●		MOD	●	
	S21	Raster - Red 1023+	●		MOD	●	
	S22	Raster - Green 1023+	●		MOD	●	
	S23	Raster - Blue 1023+	●		MOD	●	
	S24	Raster - Green 225	●		MOD	●	
	S25	Raster - Gray 307	●		MOD	●	

Command		Function	Command Receiving UCOM		Last Memory	Effective only during FAY	Remarks
			MOD	PM			
N							
NGP	S00	Negative/positive inverse: OFF	●				
	S01	Negative/positive inverse: ON	●				
P							
PAV	S00	AV selection: FACTORY	●				
	S01	AV selection: STANDARD/PERFORMANCE	●				
	S02	AV selection: DYNAMIC	●				
	S03	AV selection: MOVIE	●				
	S04	AV selection: GAME	●				
	S05	AV selection: SPORTS	●				
	S06	AV selection: PURE	●				
	S07	AV selection: USER	●				
	S08	AV selection: isf-DAY	●				
	S09	AV selection: isf-NIGHT	●				
	S10	AV selection: OPTIMUM	●				
	S11	AV selection: isf-AUTO	●				
	S12	AV selection: Standerd	●				
	S13	AV selection: Reserved (Australian standard)	●				
PBH	***	Panel white balance adjustment-Blue high-light	●		MOD	●	
PBL	***	Panel white balance adjustment-Blue low-light	●		MOD	●	
PBX	***	Panel Bx measurement value	●		MOD	●	
PBY	***	Panel By measurement value	●		MOD	●	
PCS	S00	Normal operation	●				
	S01	Catalog specifications operation	●				
PDM	S00	To enable power-down operation (To input a PD signal to the POWER SUPPLY Unit)	●				
	S01	To disable power-down operation (Not to input a PD signal to the POWER SUPPLY Unit)	●				
PES	S00	Common to displays for consumer use: Standard	●				
	S01	Common to displays for consumer use: Power-save 1	●				
	S02	Common to displays for consumer use: Power-save 2	●				
	S10	Domestic standard for displays for consumer use: Standard	●				
	S11	Domestic standard for displays for consumer use: Power-save 1	●				
	S12	Domestic standard for displays for consumer use: Power-save 2	●				
PFL	S**	Correction of luminance at the center of the screen	●				
	S00	Correction of luminance at the periphery of the screen: OFF	●				
	S01	Correction of luminance at the periphery of the screen: Fixed at ON	●				
	S02	Correction of luminance at the periphery of the screen: APL-interlocked to ON	●				
PFN		Panel module: Factory mode OFF	●			●	
PFS		Panel module: Factory-preset settings	●		MOD	●	
PFY		Panel module: Factory mode ON	●				Mask setting and MTB picture-quality settings remain the same.
PGB	S00	Blue gamma setting: Straight	●				
	S01	Blue gamma setting: Fixed at 1.6	●				
	S02	Blue gamma setting: Fixed at 1.7	●				
	S03	Blue gamma setting: Fixed at 1.8	●				
	S04	Blue gamma setting: Fixed at 1.9	●				
	S05	Blue gamma setting: Fixed at 2.0	●				
	S06	Blue gamma setting: Fixed at 2.1	●				
	S07	Blue gamma setting: Fixed at 2.2	●				
	S08	Blue gamma setting: Fixed at 2.3	●				
	S09	Blue gamma setting: Fixed at 2.4	●				
	S10-31	Blue gamma setting: Customized	●				
PGG	S00	Green gamma setting: Straight	●				
	S01	Green gamma setting: Fixed at 1.6	●				
	S02	Green gamma setting: Fixed at 1.7	●				
	S03	Green gamma setting: Fixed at 1.8	●				
	S04	Green gamma setting: Fixed at 1.9	●				
	S05	Green gamma setting: Fixed at 2.0	●				
	S06	Green gamma setting: Fixed at 2.1	●				
	S07	Green gamma setting: Fixed at 2.2	●				

Command		Function	Command Receiving UCOM		Last Memory	Effective only during FAY	Remarks
			MOD	PM			
P							
PGG	S08	Green gamma setting: Fixed at 2.3	●				
	S09	Green gamma setting: Fixed at 2.4	●				
	S10-31	Green gamma setting: Customized	●				
PGH	***	Panel white balance adjustment-Green high-light	●		MOD	●	
PGL	***	Panel white balance adjustment-Green low-light	●		MOD	●	
PGX	***	Panel Gx measurement value	●		MOD	●	
PGY	***	Panel GY measurement value	●		MOD	●	
PGR	S00	Red gamma setting: Straight	●				
	S01	Red gamma setting: Fixed at 1.6	●				
	S02	Red gamma setting: Fixed at 1.7	●				
	S03	Red gamma setting: Fixed at 1.8	●				
	S04	Red gamma setting: Fixed at 1.9	●				
	S05	Red gamma setting: Fixed at 2.0	●				
	S06	Red gamma setting: Fixed at 2.1	●				
	S07	Red gamma setting: Fixed at 2.2	●				
	S08	Red gamma setting: Fixed at 2.3	●				
	S09	Red gamma setting: Fixed at 2.4	●				
	S10-31	Red gamma setting: Customized	●				
PKD	S00	Peak Brightness Detection: OFF	●			●	
	S01	Peak Brightness Detection: ON	●			●	
PKL	S00	No brightness limitation: 100%	●				
	S01	Brightness limitation1: 87%	●				
	S02	Brightness limitation2: 73%	●				
	S03	Brightness limitation3: 60%	●				
	S04	Brightness limitation4: 52%	●				
	S05	Brightness limitation5: 40%	●				
	S06	Brightness limitation6: 27%	●				
	S07	Brightness limitation7: 13%	●				
PMT	S00	To cancel panel muting	●				
	S01	Panel muting	●				Muting cannot be performed while the built-in mask signal output is being displayed.
POF		To turn the unit OFF	●	●	PM		
PON		To turn the unit ON	●	●	PM		
PPT	S00	Panel Protection function: OFF	●			●	
	S01	Panel Protection function: ON	●			●	
PRH	***	Panel white balance adjustment-Red high-light	●		MOD	●	
PRL	***	Panel white balance adjustment-Red low-light	●		MOD	●	
PRX	***	Panel Rx measurement value	●		MOD	●	
PRY	***	Panel Ry measurement value	●		MOD	●	
Q							
QAJ		To acquire various adjustment values	●				
QAL		To acquire the NG (SD) history managed by the Panel Main microcomputer		●			
QPB		To acquire various data managed by the Panel Main microcomputer		●			
QPD		To acquire the history of power-down places	●				
QPM		To acquire pulse-meter data	●				
QPW		To acquire white balance adjustment data of the panel	●				
QPF		To acquire characteristics/function settings data of the panel	●				
QS1		To acquire panel information, such as software versions	●				
QS2		To acquire panel status data, such as acquired temperatures of the panel in cases of operation changes	●				
QS3		To acquire panel information other than the above	●				
QS5		To acquire panel information (Individual functions)	●				
QSB		To acquire versions of various microcomputers of the panel main unit		●			
QSP		To acquire subversions of various microcomputers of the panel	●				
QSD		To acquire shutdown data	●				
QSI		To acquire signal-related data	●				

Command		Function	Command Receiving UCOM		Last Memory	Effective only during FAY	Remarks
			MOD	PM			
R							
R1K	***	First reset (wedge width)	●		MOD	●	
R2K	***	Second reset (wedge width)	●		MOD	●	
RBL	S00-7	Correction of panel deterioration, Blue level 0 to 7	●		MOD	●	For enabling changed setting, it is necessary to turn the unit off then back on again.
RGL	S00-7	Correction of panel deterioration, Green level 0 to 7	●		MOD	●	
RLS	S00	Room light sensor operation: OFF	●				
	S01-5	Room light sensor operation: 1 to 5	●				
RRL	S00-7	Correction of panel deterioration, Red level 0 to 7	●		MOD	●	For enabling changed setting, it is necessary to turn the unit off then back on again.
S							
SAT	***	Timing adjustment between the scan and address	●		MOD	●	
SCW	S00	Normal operation	●				
	S01	Warning, depiction in the blue window (left)	●				
	S02	Warning, depiction in the red window (right)	●				
SDM	S00	To enable shutdown operation	●				
	S01	To disable shutdown operation	●				
SFR	S01-8	Measurement against AM radio noise: Patterns 1 to 8	●		MOD	●	For enabling changed setting, it is necessary to turn the unit off then back on again.
SKM	S00	Streaking Correction mode: OFF	●		MOD	●	
	S01-8	Streaking Correction mode: 1 to 8	●		MOD	●	
SMC	S00	Smooth clear driving: OFF	●			●	
	S01	Smooth clear driving: ON	●			●	
SN0	***	Serial No. setting 0 (Panel)	●		MOD	●	
SN1	***	Serial No. setting 1 (Panel)	●		MOD	●	
SN2	***	Serial No. setting 2 (Panel)	●		MOD	●	
SN3	***	Serial No. setting 3 (Panel)	●		MOD	●	
SN4	***	Serial No. setting 4 (Panel)	●		MOD	●	
SQM	S01	VIDEO sequence setting	●				
	S02	PC sequence setting	●				
	S03	Retake sequence setting	●				
SSM	S00	SSCG OFF	●			●	
	S01	SSCG ON	●			●	
SWA	***	Estimate value for the color of the light source (absolute value)	●				
SWF	S00	Reflection of estimate value for the color of the light source: OFF	●				
	S01	Reflection of estimate value for the color of the light source: ON	●				
SWR	***	Estimate value for the color of the light source (relative value)	●				
SYS	S00	Disabling monitoring of system cable disconnection (Standalone Operation)		●	PM		Effective only for the RS-232C connector on the panel
	S01	Enabling monitoring of system cable disconnection (System Operation)		●	PM		Effective only for the RS-232C connector on the panel
T							
THS	S00	Interlocked operation of the theater port: OFF	●				
	S01	Interlocked operation of the theater port: ON	●				
U							
UAJ		To set the flag for DIGITAL Assy adjustment to “Not adjusted”	●		MOD	●	
V							
V1F	***	To adjust the reference value for Vyknofs 1 and 2 voltages	●		MOD	●	
V3F	***	To adjust the reference value for Vyknofs 3 voltage	●		MOD	●	
V4F	***	To adjust the reference value for Vyknofs 4 voltage	●		MOD	●	
VFQ	S02	To set the frequency during mask display to VD-50 Hz	●		MOD	●	
	S03	To set the frequency during mask display to VD-60 Hz	●		MOD	●	
	S05	To set the frequency during mask display to VD-72 Hz	●		MOD	●	
	S06	To set the frequency during mask display to VD-75 Hz-1	●		MOD	●	
	S07	To set the frequency during mask display to VD-75 Hz-2	●		MOD	●	
	S13	To set the frequency during mask display to PC-60 Hz	●		MOD	●	
VOF	***	To adjust the reference value for Vysnofs voltage	●		MOD	●	
VRP	***	To adjust the reference value for Vyprst voltage	●		MOD	●	
VSU	***	To adjust the reference value for Vsus voltage	●		MOD	●	
VX1	***	To adjust the reference value for Vxpofs1 voltage	●		MOD	●	
VX2	***	To adjust the reference value for Vxpofs2 voltage	●		MOD	●	
VYF	***	To adjust the reference value for ΔVyknofs1,2/3/4 voltages	●		MOD	●	

Command		Function	Command Receiving UCOM		Last Memory	Effective only during FAY	Remarks
			MOD	PM			
W							
WBI	S00	Panel WB standard output mode: OFF	●			●	
	S01	Panel WB standard output mode: ON	●			●	
X							
X1B	***	3SF and after to First X SUS (oscillation increase amount)	●		MOD	●	
X3B	***	2SF to Third X SUS (oscillation increase amount)	●		MOD	●	
XSB	***	2SF to Repetition X SUS (oscillation increase amount)	●		MOD	●	
Y							
Y1K	***	1SF to Y SUSTAIL (wedge width)	●		MOD	●	
Y1Z	***	1SF to Y SUSTAIL (oscillation decrease amount)	●		MOD	●	
Y2B	***	2SF to Second Y SUS (oscillation increase amount)	●		MOD	●	
Y2K	***	2SF to Y SUSTAIL (wedge width)	●		MOD	●	
Y2Z	***	2SF to Y SUSTAIL (oscillation decrease amount)	●		MOD	●	
YNK	***	3SF and after (2-pulse SSF) to Y SUSTAIL (wedge width)	●		MOD	●	
YTK	***	3SF and after to Y SUSTAIL (wedge width)	●		MOD	●	
YTZ	***	3SF and after to Y SUSTAIL (oscillation decrease amount)	●		MOD	●	
YSB	***	2SF to Repetition Y SUS (oscillation increase amount)	●		MOD	●	

5.9 DETAILS OF RS-232C COMMANDS

[1] QS1 (PANEL STATUS)

Model information and version information are returned.

Command Format	Effective Operation Modes	Function	Remarks
[QS1]	Every Time	Output of status	Return data: 3 (ECO) + 112 (DATA) + 2 (CS) = 117 Byte

Data Arrangement		Data Length	Output Example
ECO		3 byte	QS1
1	Resolution/Size	1 byte	F
2	Panel Generation	1 byte	9
3	Destination	1 byte	*
4	Grade	1 byte	*
5	Panel Product Form	1 byte	A
6	Boot version of Module microcomputer	3 byte	-01A
7	Program version of Module microcomputer	8 byte	-01A‘’’’
8	Boot version of sequence processor	3 byte	-01Z
9	Program version of sequence processor	8 byte	-01Z‘’’’
10	Panel information	8 byte	G9_50F_2
11	Derivative operation identification	1 byte	*
12	Reserved (panel section)	7 byte	*******
13	, (comma)	1 byte	,
14	MTB generation	1 byte	9
15	MTB destination	1 byte	A
16	MTB grade	1 byte	H
17	MTB product form	1 byte	B
18	Program version of IF microcomputer	8 byte	-01A
19	Boot version of IF microcomputer	4 byte	01A
20	Program version of Main microcomputer	8 byte	-01A
21	Boot version of Main microcomputer	4 byte	01A
22	Common version of ASIC	8 byte	-01A
23	Boot version of ASIC	8 byte	01A
24	PRS version of ASIC	8 byte	-01A
25	PIC version of ASIC	8 byte	-01A
26	Common version of the Digital Tuner	8 byte	-0A
27	Boot version of the Digital Tuner	4 byte	01A
CS	2 Byte	2 byte	4A

11: Derivative Operation Identification	
*	Standard model operation
1	Derivative model operation

14: MTB Generation	
9	G9

15: MTB Destination	
A	North America
C	China
E	Europe
G	General
J	Japan
U	Australia

16: MTB Grade	
H	Elite/One body Europe HD /System Europe HD/One body Australia
T	Regular/One body Europe SD
D	Derivative Model
*	No Grade (Japan/General/China)

17: MTB Product Form	
B	One body model
S	System model

1: Resolution/Size	
F	50-FHD (1920*1080)
G	60-FHD (1920*1080)

2: Panel Generation	
9	G9

3: Destination	
*	Commonness

4: Grade	
*	Commonness
Z	Evaluation

5: Not used	
A	“A” fixed

10: Panel Information (8 Byte)		
1 to 2nd byte	G9	Generation information
4 to 5th byte	50	50 inch
	60	60 inch
6th byte	F	FHD
8th byte	3	50 inch 2nd PLANT (Reserved)
	2	50 inch 2nd PLANT
	1	50 inch 1st PLANT
	‘	Others

‘ = space

[2] QS2 (PANEL OPERATION DATA)

The command QS2 is for acquiring data on the panel's operational information.

Command Format	Effective Operation Modes	Function	Remarks
[QS2]	Every Time	Output of status	Return data: 3 (ECO) + 34 (DATA) + 2 (CS) = 39 Byte

Data Arrangement		Data Length	Output Example
ECO		3 byte	QS2
1	Notify of the standby operation transition	1 byte	1
2	Adjustment flag of the main unit	1 byte	0
3	Adjustment-data backup flag	1 byte	0
4	"1st PD" data	1 byte	0
5	"2nd PD" data	1 byte	0
6	Color sensor data	1 byte	0
7	Reserved	2 byte	**
8	Temperature data (TEMP 1)	3 byte	128
9	SD data	1 byte	0
10	SD subcategory data	1 byte	0
11	Operation status induced by SD	1 byte	0
12	Reserved	3 byte	***
13	HOUR METER	8 byte	00000259
14	MASK indication	1 byte	0
15	Still picture detection	1 byte	0
16	SCAN protection detection	1 byte	0
17	Panel crack detection	1 byte	0
18	Address emergency detection	1 byte	0
19	Reserved	4 byte	****
CS	2 Byte	2 byte	4A

1: Power supply status	
P	During power ON
0	Shifting to Passive Standby is not possible.
1	Shifting to Passive Standby is possible.

2: Adjustment flag of the main unit	
0	Adjustment completed
1	Adjustment not completed

3: Adjustment-data backup flag	
0	Adjustment completed
1	Adjustment not completed

4, 5: PD data	
0	No PD data
2	POWER
3	SCAN
4	SCN-5V
6	Y-DCDC
7	Y-SUS
8	ADRS
A	X-DCDC
B	X-SUS
C	DIG-DCDC
F	UNKNOWN

6: Color sensor data	
-	Function OFF (including standby)
0	Normal
1	Hardware connection is not completed
2	Data mismatching

9: SD data	
0	No SD
1	SQ_LSI
2	MDU-DEVICE
3	RST2
4	Panel temperature

10-1: SD subcategory (SQ_LSI)	
0	No SD-Sub data
1	Communication error
2	Drive stop
3	BUSY
4	Version mismatching (H/S)
5	Version mismatching (H/M)
6	Version mismatching (H/I)

10-2: SD subcategory (MDU-DEVICE)	
0	No SD-Sub data
1	EEPROM
2	BACKUP
3	DAC

10-3: SD subcategory (Panel temperature)	
0	No SD-Sub data
1	Panel high temperature
2	Panel low temperature

11: Operation status induced by SD	
0	Normal
1	Relay-off completed
2	During warning indication

14: MASK indication	
0	MASK-OFF
1	MASK-ON

15 to 18: Detection of Each Protection function	
0	Normal operation
1	At detection of protection operation

[3] QS3 (OTHER DATA ON THE PANEL)

The command QS3 is for acquiring data on operational information of the panel.

Command Format	Effective Operation Modes	Function	Remarks
[QS3]	Every Time	Output of status	Return data: 3 (ECO) + 58 (DATA) + 2 (CS) = 63 Byte

Data Arrangement		Data Length	Output Example
ECO		3 byte	QS3
1	SERIAL	15 byte	- - - - - - - - - - - - - - -
2	HOUR METER	8 byte	00000000
3	TOTAL HR METER	8 byte	00000000
4	PON COUNTER	8 byte	00000000
5	Panel temperature (*1)	5 byte	23.5
6	Reserved (TEMP0 acquisition)	5 byte	_ _ _._
7	MAX panel temperature history (*1)	5 byte	78.3
8	Reserved	4 byte	****
CS	2 Byte	2 byte	94

Note
(*1) : Centigrade scale

[4] QS5 (COLOR SENSOR DATA)

The command QS5 is for acquiring the color sensor information.

Command Format	Effective Operation Modes	Function	Remarks
[QS5]	Every Time	Output of status	Return data: 3 (ECO) + 45 (DATA) + 2 (CS) = 50 Byte

Data Arrangement		Data Length	Output Example
ECO		3 byte	QS5
1	Color sensor data (Note)	1 byte	2
2	RED data of color sensor	4 byte	0425
3	GREEN data of color sensor	4 byte	2112
4	BLUE data of color sensor	4 byte	5000
5	Reserved	32 byte	** to **
CS	2 Byte	2 byte	94

Note: The color sensor data is output as the same data as QS2.

[5] QSP (SUB VERSION OF THE PANEL SECTION)

The command QSP is for acquiring sub version data on software of the panel.

Command Format	Effective Operation Modes	Function	Remarks
[QSP]	Every Time	Output of status	Return data: 3 (ECO) + 40 (DATA) + 2 (CS) = 45 Byte

Data Arrangement		Data Length	Output Example
ECO		3 byte	QSP
1	MDUcom-PRG	8 byte	=01Y
2	MDUcom-DATA_TBL	8 byte	=01Y ’’’’
3	SQ_LSI-PRG	4 byte	=01Y
4	SQ_LSI-PIC_TBL	8 byte	=01Y ’’’’
5	SQ_LSI-SEQ_DATA	4 byte	=01Y
6	Reserved	8 byte	********
CS	2 Byte	2 byte	A3

[6] QAJ (PANEL ADJUSTMENT DATA)

The command QAJ is for acquiring the panel's factory-preset data.

Command Format	Effective Operation Modes	Function	Remarks
[QAJ]	Every Time	Output of status	Return data: 3 (ECO) + 84 (DATA) + 2 (CS) = 89 Byte

Data Arrangement		Data Length	Output Example
ECO		3 byte	QAJ
1	Vsus adjustment value	3 byte	128
2	Vysnofs adjustment value	3 byte	128
3	Vyprst adjustment value	3 byte	128
4	Vxpofs1 adjustment value	3 byte	128
5	Vxpofs2 adjustment value	3 byte	128
6	Vyknofs1,2 adjustment value	3 byte	128
7	Vyknofs3 adjustment value	3 byte	128
8	Vyknofs4 adjustment value	3 byte	128
9	Δ Vyknofs1,2/3/4 adjustment value	3 byte	128
10	Reserved	6 byte	******
11	R1K adjustment value	3 byte	128
12	R2K adjustment value	3 byte	128
13	Y1K adjustment value	3 byte	128
14	Y1Z adjustment value	3 byte	128
15	X1B adjustment value	3 byte	128
16	Y2B adjustment value	3 byte	128
17	X3B adjustment value	3 byte	128
18	YSB adjustment value	3 byte	128
19	XSB adjustment value	3 byte	128
20	YTK adjustment value	3 byte	128
21	YTZ adjustment value	3 byte	128
22	Y2K adjustment value	3 byte	128
23	Y2Z adjustment value	3 byte	128
24	YNK adjustment value	3 byte	128
25	SAT adjustment value	3 byte	128
26	Reserved	3 byte	***
27	AM radio countermeasure	1 byte	1
28	Reserved	2 byte	**
CS	2 Byte	2 byte	B7

27: AM radio countermeasure	
n	n: 1 to 8 (SUS frequency n)

[7] QPW (VIDEO ADJUSTMENT DATA OF THE PANEL)

The command QPW is for acquiring the factory-preset data about the video of the panel.

Command Format	Effective Operation Modes	Function	Remarks
[QPW]	Every Time	Output of status	Return data: 3 (ECO) + 40 (DATA) + 2 (CS) = 45 Byte

Data Arrangement		Data Length	Output Example
ECO		3 byte	QPW
1	Type of drive sequence (Note 1)	4 byte	60VS
2	ABL adjustment table	1 byte	1
3	Type of WB adjustment table (Note 1)	1 byte	1
4	ABL adjustment value	3 byte	128
5	R-HIGH adjustment value	3 byte	256
6	G-HIGH adjustment value	3 byte	256
7	B-HIGH adjustment value	3 byte	256
8	R-LOW adjustment value	3 byte	512
9	G-LOW adjustment value	3 byte	512
10	B-LOW adjustment value	3 byte	512
11	R gamma setting	2 byte	31
12	G gamma setting	2 byte	10
13	B gamma setting	2 byte	10
14	Streaking correction	1 byte	1
15	Center luminance correction	1 byte	0
16	Reserved	1 byte	*
17	Interlocked with APL	1 byte	0
18	Transition of protective operations	1 byte	0
19	Reserved	2 byte	**
CS	2 Byte	2 byte	37

1: Type of Drive sequence

50VS	Video 50 Hz
60VS	Video 60 Hz
72VS	Video 72 Hz
75V1	Video 75-1 Hz
75V2	Video 75-2 Hz
60PS	PC 60 Hz

2: ABL adjustment table

n	n: 1 to 3

3: Type of WB adjustment table

n	n: 1 to 4

11, 12, 13: RGB Gamma setting

n	00 to 31

15: Center luminance correction

0	OFF
1	ON
2	ON (interlocked with APL)

17: Interlocked with APL

0	OFF
1	ON
2	WB interlocked ON/γ OFF
3	WB interlocked OFF/γ ON

18: Transition of protective operations

0	Upper limit state for brightness
1	Brightness being reduced
2	Lower limit state for brightness
3	Brightness being increased

Note 1: The "75 Hz-2" Drive Sequence type signals and WB Adjustment Table 4 are output only when "75 Hz-2" (VFQS07) is selected for internal signals (mask signals).
When external signals are selected and the Drive Sequence type is 75 Hz, "75 Hz-1" is output because "75 Hz-1" and "75 Hz-2" are not distinguished for external signals.

[8] QPF (FUNCTION OF THE PANEL)

The command QPF is for acquiring the characteristic and the function setting value of the panel.

Command Format	Effective Operation Modes	Function	Remarks
[QPF]	Every Time	Output of status	Return data: 3 (ECO) + 69 (DATA) + 2 (CS) = 74 Byte

Data Arrangement		Data Length	Output Example
ECO		3 byte	QPF
1	R-REVISE setting value	1 byte	0
2	G-REVISE setting value	1 byte	0
3	B-REVISE setting value	1 byte	0
4	Reserved	3 byte	***
5	ADDRESS L1,L2 setting value	2 byte	01
6	ADDRESS L3,L4 setting value	2 byte	13
7	ADDRESS U1,U2 setting value	2 byte	32
8	ADDRESS U3,U4 setting value	2 byte	30
9	Reserved	4 byte	****
10	Streaking correction	1 byte	1
11	Full-screen black display mode	1 byte	1
12	Reserved	4 byte	****
13	PANEL RX	3 byte	512
14	PANEL RY	3 byte	512
15	PANEL GX	3 byte	512
16	PANEL GY	3 byte	512
17	PANEL BX	3 byte	512
18	PANEL BY	3 byte	512
19	Reserved	6 byte	******
20	Color sensor R coefficient	3 byte	***
21	Color sensor G coefficient	3 byte	***
22	Color sensor B coefficient	3 byte	***
23	Reserved	12 byte	** to **
CS	2 Byte	2 byte	37

1: 2: 3: RGB-REVISE setting value	
n	n: 0 to 7 (Level n)

5 to 8: ADDRESS α, β setting	
nm	n: 0 to 9 (Address α setting PHASE n)
	m: 0 to 9 (Address β setting PHASE m)

10: Streaking correction	
0	OFF
n	n: 1 to 8 (Mode n)

11: Full-screen black display mode	
0	OFF (In-phase SUS drive prohibition)
1	MODE1 (In-phase SUS drive permission)

[9] QPM (PULSE METER VALUE)

The command QPM is for acquiring the accumulated pulse count.

Command Format	Effective Operation Modes	Function	Remarks
[QPM]	Every Time	Output of status	Return data: 3 (ECO) + 40 (DATA) + 2 (CS) = 45 Byte

Data Arrangement		Data Length	Output Example
ECO		3 byte	QPM
1	Pulse meter B 1	8 byte	00000000
2	Pulse meter B 2	8 byte	00000000
3	Pulse meter B 3	8 byte	00000000
4	Pulse meter B 4	8 byte	00000000
5	Pulse meter B 5	8 byte	00000000
CS	2 Byte	2 byte	E7

Note:
The minimum for a returned value of the pulse meter for each block (B1-B2) is one million.

[10] QPD (POWER DOWN LOGS)

The command QPD is for acquiring data from the 8 latest power-down (PD) logs.

Command Format	Effective Operation Modes	Function	Remarks
[QPD]	Every Time	Output of status	Return data: 3 (ECO) + 80 (DATA) + 2 (CS) = 85 Byte

Data Arrangement		Data Length	Output Example
ECO		3 byte	QPD
1	Latest "1st PD" data	1 byte	A
2	Latest "2nd PD" data	1 byte	2
3	Data from the hour meter for the latest PD	8 byte	00010020
4	Second latest "1st PD" data	1 byte	E
5	Second latest "2nd PD" data	1 byte	9
6	Data from the hour meter for the second latest PD	8 byte	00008523
7	Third latest "1st PD" data	1 byte	4
8	Third latest "2nd PD" data	1 byte	3
9	Data from the hour meter for the third latest PD	8 byte	00004335
10	Fourth latest "1st PD" data	1 byte	2
11	Fourth latest "2nd PD" data	1 byte	0
12	Data from the hour meter for the fourth latest PD	8 byte	00000945
13	Fifth latest "1st PD" data	1 byte	4
14	Fifth latest "2nd PD" data	1 byte	0
15	Data from the hour meter for the fifth latest PD	8 byte	00000715
16	Sixth latest "1st PD" data	1 byte	A
17	Sixth latest "2nd PD" data	1 byte	2
18	Data from the hour meter for the sixth latest PD	8 byte	00000552
19	Seventh latest "1st PD" data	1 byte	A
20	Seventh latest "2nd PD" data	1 byte	0
21	Data from the hour meter for the seventh latest PD	8 byte	00000213
22	Eighth latest "1st PD" data	1 byte	D
23	Eighth latest "2nd PD" data	1 byte	0
24	Data from the hour meter for the eighth latest PD	8 byte	000001A7
CS	2 Byte	2 byte	27

• PD data	
0	No PD
2	P-POWER
3	SCAN
4	SCN-5V
6	Y-DCDC
7	Y-SUS
8	Address
A	X-DCDC
B	X-SUS
C	DIGI-DCDC
F	UNKNOWN

[11] QSD (SHUTDOWN LOGS of the Panel Section)

The command QSD is for acquiring the data from the 8 latest shutdown (SD) logs of the panel section.

Command Format	Effective Operation Modes	Function	Remarks
[QSD]	Every Time	Output of status	Return data: 3 (ECO) + 80 (DATA) + 2 (CS) = 85 Byte

Data Arrangement		Data Length	Output Example
ECO		3 byte	QSD
1	Latest SD data	1 byte	1
2	Latest SD subcategory data	1 byte	0
3	Data from the hour meter for the latest SD	8 byte	00752013
4	Second latest SD data	1 byte	5
5	Second latest SD subcategory data	1 byte	0
6	Data from the hour meter for the second latest SD	8 byte	00495204
7	Third latest SD data	1 byte	2
8	Third latest SD subcategory data	1 byte	3
9	Data from the hour meter for the third latest SD	8 byte	00100355
10	Fourth latest SD data	1 byte	2
11	Fourth latest SD subcategory data	1 byte	5
12	Data from the hour meter for the fourth latest SD	8 byte	00075620
13	Fifth latest SD data	1 byte	1
14	Fifth latest SD subcategory data	1 byte	0
15	Data from the hour meter for the fifth latest SD	8 byte	00000852
16	Sixth latest SD data	1 byte	2
17	Sixth latest SD subcategory data	1 byte	2
18	Data from the hour meter for the sixth latest SD	8 byte	00000451
19	Seventh latest SD data	1 byte	0
20	Seventh latest SD subcategory data	1 byte	0
21	Data from the hour meter for the seventh latest SD	8 byte	00000000
22	Eighth latest SD data	1 byte	0
23	Eighth latest SD subcategory data	1 byte	0
24	Data from the hour meter for the eighth latest SD	8 byte	00000000
CS	2 Byte	2 Byte	7D

• SD data

0	No SD
1	SQ_LSI
2	MDU-DEVICE
3	RST2
4	Panel temperature

• SD subcategory (SQ_LSI)

0	No SD-Sub data
1	Communication error
2	Drive stop
3	BUSY
4	Version mismatching (H/S)
5	Version mismatching (H/M)
6	Version mismatching (H/I)

• SD subcategory (MDU-DEVICE)

0	No SD-Sub data
1	EEPROM
2	BACKUP
3	DAC

• SD subcategory (Panel temperature)

0	No SD-Sub data
1	TEMP1 (high temperature)
2	TEMP1 (low temperature)

[12] QSI (INPUT SIGNAL DATA)

The command QSI is for acquiring all data on input video signals.

Command Format	Effective Operation Modes	Function	Remarks
[QSI]	Every Time	Output of status	Return data: 3 (ECO) + 66 (DATA) + 2 (CS) = 71 Byte

Data Arrangement		Data Length	Output Example
ECO		3 Byte	QSI
1	Type of drive sequence (Note)	4 Byte	60VS
2	Type of ABL adjustment table (Note)	1 Byte	1
3	Type of WB adjustment table (Note)	1 Byte	1
4	Reserved	4 Byte	****
5	Total value of PRH	4 Byte	0256
6	Total value of PGH	4 Byte	0256
7	Total value of PBH	4 Byte	0256
8	Reserved	4 Byte	****
9	Total value of PRL	4 Byte	0512
10	Total value of PGL	4 Byte	0512
11	Total value of PBL	4 Byte	0512
12	Total value of ABL	3 Byte	128
13	V frequency distinction	4 Byte	6002
14	Reserved	4 Byte	****
15	APL acquiring data	4 Byte	1023
16	Number of SUS pulses	4 Byte	0457
17	Detection status of still picture	1 Byte	1
18	Detection status of cracking in the panel	1 Byte	1
19	Detection status of SCAN protection	1 Byte	1
20	Detection status of external protection	1 Byte	1
21	Transition of protection operations	1 Byte	0
22	Address emergency status	1 Byte	1
23	Detection status of reset operation	1 Byte	1
24	In-phase SUS mode status	1 Byte	1
25	Reserved	1 Byte	1
CS	2 Byte	2 Byte	27

18 to 20: Each protection function	
0	Setting: OFF
1	Setting: ON (during wait)
2	Setting: ON (during operation)

21: Transition of protection operations	
0	Upper limit status for brightness
1	Brightness being reduced
2	Lower limit status for brightness
3	Brightness being increased

22: Address emergency status	
0	Normal status
1	Emergency status

23: Reset operation status	
A	All reset operation
2	Interlace 1/2 reset operation
4	Interlace 1/4 reset operation
L	Reset less operation (specifications operation)

24: In-phase SUS mode status	
0	Normal status
1	In-phase SUS mode status
2	Assist status at the cancellation

Note: The types of drive sequence and ABL/WB table are output as the same data as QPW.

[13] DRV (PANEL DRIVE-POWER ON/OFF)

Panel drive-power ON/OFF (drive ON/OFF) is controllable.

Command Format	Operation		Remarks
	Effective Operation Modes	Function	
[DRV+S00]	Every time	DRIVE OFF	If a command is issued in Standby mode, and the unit is left unoperated for more than 10 seconds, the command will become void.
[DRV+S01]	Every time	DRIVE ON (default)	

Note: The function of the DRIVE OFF key on the remote control unit for servicing is the same as that of the DRVS00 command. (A function equivalent to that of the DRVS01 command is not provided for the remote control unit for servicing.)

[14] FAY/FAN (ADJUSTMENT COMMANDS PERMISSION/PROHIBITION)

The commands FAY/FAN are for prohibiting/permitting panel/MTB-adjustment commands.

Command Format	Operation		Remarks
	Effective Operation Modes	Control	
[FAY]	Normal operation mode while the power is on	Adjustment command is valid.	For details, refer to the section “6.1 [3] FUNCTIONS WHEN ENTERING THE SERVICE FACTORY MODE” of the Service Manual for Media Receiver (KRP-M01).
[FAN]	During FAY	Adjustment command is invalid.	

[15] FAJ/UAJ/CBU/BCP (BACKUP FUNCTION FOR ADJUSTMENT VALUE)

When the DIGITAL Assy is to be replaced, adjustment values can be copied from the backup EEPROM to the EEPROM of the Assy for service.

Command Format	Operation		Remarks
	Effective Operation Modes	Control	
[FAJ]	During FAY	To make the status of the EEPROM on the DIGITAL Assy "adjustment completed" and copy the data to the EEPROM for backup	This takes at least 350 msec.
[UAJ]		To make the status of the EEPROM on the DIGITAL Assy "adjustment not completed"	Only the status is changed, and the real data are not erased.
[CBU]		To make the status of the EEPROM on for backup "adjustment not completed"	Only the status is changed, and the real data are not erased. However, if the status of the EEPROM on the DIGITAL Assy is "adjustment completed," the data in the EEPROM of the DIGITAL Assy will be copied to the EEPROM for backup upon POF.
[BCP]		To copy the backup data from the EEPROM for backup to the EEPROM on the DIGITAL Assy	

[16] QSB

Data on models and versions of the Module microcomputer and Panel Main microcomputer can be acquired.

Command Format	Effective status	Function	Remarks
[QSB]	Every time	To acquire versions of various programs managed by the Panel Main and Module microcomputers	Return data: 3 (ECO) + 87 (DATA) + 2 (CS) = 92 Byte

Data Arrangement			Data Length	Output Example	Remarks
ECO	Echo back		3	"QSB"	
1	Data managed by the Module microcomputer	Display data 1 (resolution, size)	1	F	See QS1.
2		Display data 2 (generation)	1	9	See QS1.
3		Display data 3 (destination)	1	*	See QS1.
4		Display data 4 (grade)	1	*	See QS1.
5		Display data 5 (product style)	1	A	See QS1.
6		Boot version of the Module microcomputer	3	01A	See QS1.
7		Program version of the Module microcomputer (common program of the MD microcomputer)	8	001A ' ' ' '	See QS1.
8		Boot version of the later ASIC (SQ_LSI Boot)	3	01H	See QS1.
9		Program version of the later ASIC (common program of the SQ_LSI)	8	001Y ' ' ' '	See QS1.
10		PANEL INFO	8	G9_50F_2	See QS1.
11		Reserved	8		(All digits are padded with asterisks.)
12	Data managed by the Panel Main microcomputer	Delimiter	1	","	
13		Dummy	4	"****"	
14		Version data of the Panel Main microcomputer	3	– 01	Version of the program
			1	A	A (fixed)
			1	S	S (fixed)
			3	Space	Reserved for the version of the program
			1	Space	Reserved for the version of the boot program
			3	07A	Version of the boot program
15		Model data (Bezel color data, etc.)	1	1	1: R1 (ROM Table 1, 2: R2 (ROM Table 2), 3: R3 (ROM Table 3), E: EP (For use by engineers)
16		Firmware version data of the Displayport_Rx	16	1.10	Version of the program
17		Firmware version data of the Displayport_Rx	4	0C15	Version of hardware
18		Reserved	6		"Space"
CS	Check sum		2	(CS)	

[17] QPB (Panel Main Operation Information)

Data on operation of the display main unit can be acquired.

Command Format	Effective status	Function	Remarks
[QPB]	Every time	To acquire data on current statuses managed by the Panel Main microcomputer	Return data: 3 (ECO) + 53 (DATA) + 2 (CS) = 58 Byte

Data Arrangement		Data Length	Output Example	Remarks
ECO	Echo back	3	"QPB"	
1	Data on panel temperature	5	*****	Temperature of the panel (in Centigrade) (Tmd)
2	Delimiter	1	","	Comma
3	Unit temperature data 1	5	*****	Temperature inside the unit (in Centigrade) (T1)
4	Delimiter	1	","	Comma
5	Unit temperature data 2 (reserved)	5	*****	Temperature inside the unit (in Centigrade) (T2) (Reserved, All digits are padded with asterisks.)
6	Delimiter	1	","	Comma
7	Unit temperature data 3 (reserved)	5	*****	Temperature inside the unit (in Centigrade) (T3) (Reserved, All digits are padded with asterisks.)
8	Delimiter	1	","	Comma
9	Fan rotation speed A	1	A	Fan setting A (S: stop, L: Low, H: High, and A: Auto)
10	Fan control A/D value (A)	3	***	Fan control D/A value, A, decimal code
11	Fan rotation speed B	1	A	Fan setting B (S: stop, L: Low, H: High, and A: Auto)
12	Fan control A/D value (B)	3	***	Fan control D/A value, B, decimal code
13	Room Light Sensor level	1	5	0-7, padded with an asterisk during the sensor is off
14	Room Light Sensor A/D value	4	****	Brightness sensor A/D value, decimal code
15	Dummy 1	2	**	All digits are padded with asterisks.
16	System Operation mode of the panel	1	S	S: System Operation mode, T: Standalone Operation mode
17	Dummy 2	2	**	All digits are padded with asterisks.
18	Audio muting	1	0	0: Canceling muting, 1: Muting
19	Reserved	10	**	All digits are padded with asterisks.
CS	Check sum	2	(CS)	

[18] QAL (Shutdown information for the display main unit)

Up to the 8 latest shutdown logs of the display main unit can be acquired.

Command Format	Effective status	Function	Remarks
[QAL]	Every time	To acquire up to the 8 latest shutdown logs managed by the Panel Main microcomputer	Return data: 3 (ECO) + 96 (DATA) + 2 (CS) = 101 Byte

Data Arrangement		Data Length	Output Example	Remarks
ECO	Echo back	3	"QAL"	
1	Data on the latest shutdown	12		Reasons of the latest 8 shutdowns and hour-meter data when the shutdowns were generated (For details, see the tables below.)
2	Data on the 2nd latest shutdown	12		
3	Data on the 3rd latest shutdown	12		
4	Data on the 4th latest shutdown	12		
5	Data on the 5th latest shutdown	12		
6	Data on the 6th latest shutdown	12		
7	Data on the 7th latest shutdown	12		
8	Data on the 8th latest shutdown	12		
CS	Check sum	2	(CS)	

■ Shutdown (SD) data

Order	Content	Length (BYTE)	Value	Remarks
1	SD category data	1		SD category (For details, see the table below.) 0 for no SD
2	SD subcategory data	1		SD subcategory (For details, see the table below.)
3	HOUR METER	7		Time when a shutdown managed by the Panel Main microcomputer was generated All digits are padded with asterisks when there was no SD.
4	Dummy	3		All digits are padded with asterisks.

■ SD categories/SD subcategories

SD category (response)	Reason for SD	w/wo subcategory	SD subcategory (response)	Reason for subcategory
"0"	No SD (no abnormality)	Without subcategory	"0"	
"5"	Shutdown signal from D-Amp. Short-circuit of speaker terminal.	With subcategory	"1"	A_NG_B : L
			"2"	OTW : L
"6"	Failure in module microcomputer communication	Without subcategory	"0"	
"8"	Failure in IIC communication	With subcategory	"1"	Displayport receiver
			"2"	Failure in AUDIO PWM IC communication
"A"	FAN stop	With subcategory	"1"	FAN_A stop
			"2"	FAN_B stop
"B"	Abnormal temperature of the display unit (high)	With subcategory	"1"	High temperature at Temperature Sensor 1
			"2"	High temperature at Temperature Sensor 2
"D"	Abnormality in power of the Display MAIN Assy	With subcategory	"1"	Abnormality in 6.5V power supply.

6. SERVICE FACTORY MODE
6.1 DETAILS OF THE FACTORY MENU

The Factory menu will be displayed only when the Media Receiver is connected. For details on how to enter Factory menu, refer to “6.1 DETAILS OF THE FACTORY MENU” in the service manual for the Media Receiver.

[1] PANEL FACT.

■ Operation Items

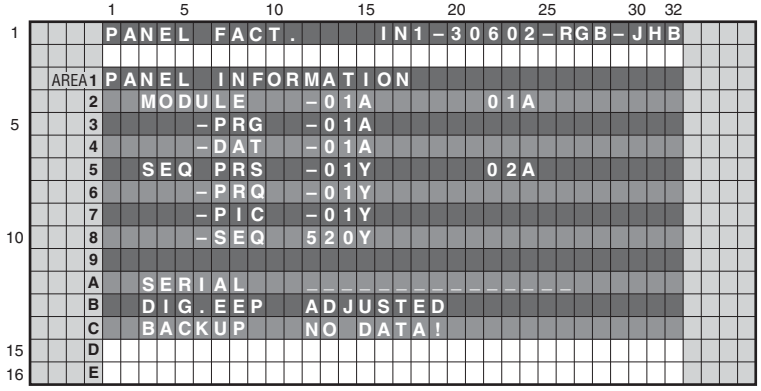
This is the menu screen for the adjustment of the panel. Data acquisition and value adjustment can be performed for the following items:

No.	Indication	Description of functions
[1-1]	PANEL INFORMATION	Data, such as the version of the microcomputer of the panel, product serial number, and statuses of EEPROM for adjustment values for the main unit and for backup, are displayed.
[1-2]	PANEL WORKS	Operation data, such as accumulated pulse-meter count, accumulated hour-meter count, accumulated power-on count, and the temperature detected by the sensor, are displayed.
[1-3]	POWER DOWN	The power-down history is displayed.
[1-4]	SHUT DOWN	The shutdown history of the panel section is displayed.
[1-5]	PANEL-1 ADJ (+)	Settings of the driving voltage and AM radio prevention can be performed.
[1-6]	PANEL-2 ADJ (+)	White balance and ABL (power consumption) for the panel can be set.
[1-7]	PANEL FUNCTION (+)	Setting of the panel-degradation correction-level and various functions are displayed.
[1-8]	ETC. (+)	Copying of backup data, clearing of various settings, and changing of settings for functions for which setting data are not stored upon last update are performed.
[1-9]	RASTER MASK SETUP (+)	The mask indication (RASTER) can be set and indicated.
[1-10]	PATTERN MASK SETUP (+)	The mask indication (PATTERN) can be set and indicated.
[1-11]	COMBI MASK SETUP (+)	The mask indication (COMBI) can be set and indicated.

■ Details of indications in each layer

[1-1] PANEL INFORMATION

• Data, such as the version of the microcomputer of the panel, product serial number, and statuses of digital EEPROM for storing the adjustment values and for backup EEPROM, are displayed. No other layers are nested below this layer, and there are no adjustment items.



■ Key operation

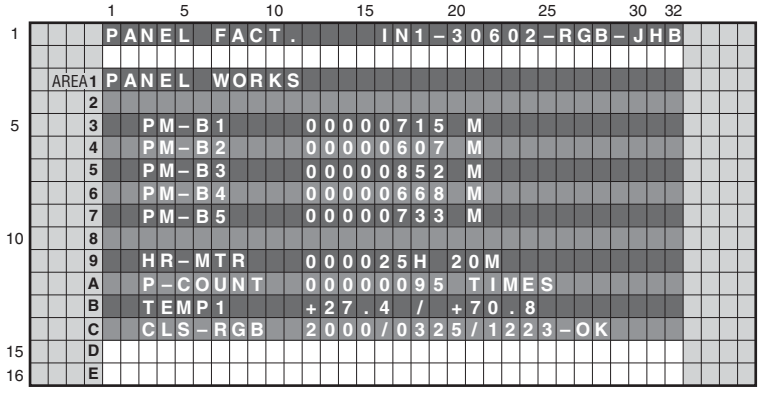
<DOWN> : Shifting to PANEL WORKS
<UP> : Shifting to COMBI MASK SETUP (+)
<L/R> : Updating displayed information

■ Contents of the Display item

MODULE : The version of data written in the Module microcomputer is indicated.
-PRG : The program version of the Module microcomputer is indicated.
-DAT : The data version of the Module microcomputer is indicated.
SEQ PRS : The version of data written in the Sequence LSI is indicated.
-PRG : The program version of the Sequence LSI is indicated.
-PIC : The Picture-data version of the Sequence LSI is indicated.
-SEQ : The sequence-data version of the Sequence LSI is indicated.
SERIAL : The serial number of the module is indicated.
DIG.EEP : The adjusted status of the EEPROM that is mounted on the DIGITAL Assy is indicated.
BACKUP : The adjusted status of the EEPROM for backup that is mounted on the SENSOR Assy is indicated.

[1-2] PANEL WORKS

• Data on operations, such as the accumulated pulse-meter counts, hour-meter count, power-on count, and temperature detected by the sensor, are displayed. No other layers are nested below this layer, and there are no adjustment items.



■ Key operation

<DOWN> : Shifting to POWER DOWN
<UP> : Shifting to PANEL INFORMATION
<L/R> : Updating displayed information

← Temperature unit is " °C (Centigrade) ".

■ Contents of the Display item

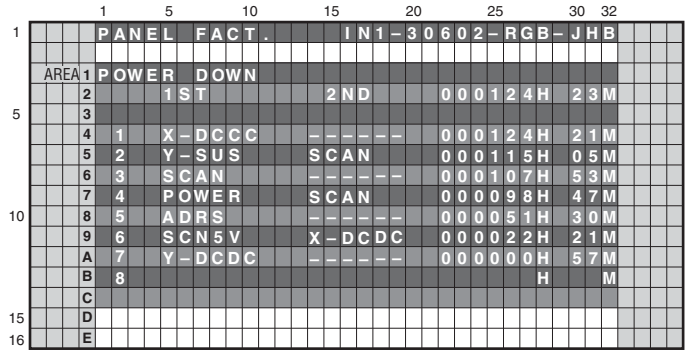
- PM-B1 to B5: The accumulated pulse-meter counts for the 5 blocks on the screen are indicated. (the lowest-order digit represents millions of pulses.)
- HR-MTR: The hour-meter value (accumulated power-on hours) is indicated.
- P-COUNT: The accumulated power-on count is indicated.
- TEMP1: The current panel temperature and the historical maximum temperature recorded in memory are indicated. The temperature unit is " °C (Centigrade) ".
- CLS-RGB: Data obtained from the color sensor are displayed in the order R, G, and B, with the status indication at the end.

CLS Status	OSD Indication
Function OFF	-OFF
Color sensor module non connection	-NC
Data abnormality	-INV
Data normal	-OK

Note:
Neither the color sensor value nor the status indication will be displayed if the color sensor function is set to ON in the ETC (+) layer beforehand.

[1-3] POWER DOWN

- The power-down history is displayed. No other layers are nested below this layer.


PANEL FACT. IN1-30602-RGB-JHB
AREA 1 POWER DOWN
1ST 2ND 000124H 23M
1 X-DCCC ------ 000124H 21M
2 Y-SUS SCAN 000115H 05M
3 SCAN ------ 000107H 53M
4 POWER SCAN 000098H 47M
5 ADRS ------ 000051H 30M
6 SCN5V X-DCDC 000022H 21M
7 Y-DCDC ------ 000000H 57M
8 H M

■ Key operation

<DOWN> : Shifting to SHUT DOWN
<UP> : Shifting to PANEL WORKS
<L/R> : Updating displayed information

■ Contents of the Display item

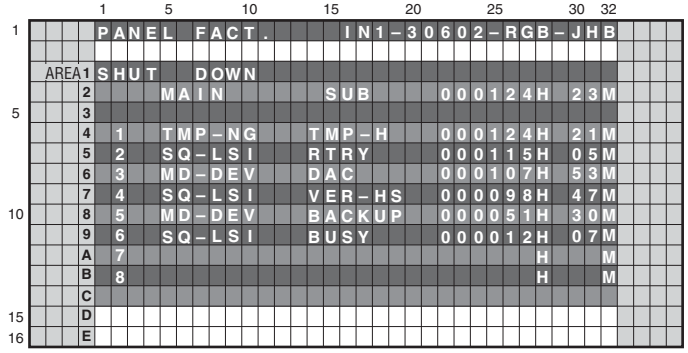
- The last most 8 power-down histories are displayed with the hour-meter values that indicate the hours when power-downs occurred.
- When power-down is confirmed, the factor is displayed as "1st", "2nd", according to the accuracy order.
- The power-down history is not recorded when the power-down occurred at the same place and same time.

<Causes of power-down and corresponding OSD indications>

Cause of power-down	OSD Indication	Cause of power-down	OSD Indication
POWER SUPPLY Unit	P-PWR	ADDRESS Assy	ADRS
SCAN Assy	SCAN	DC/DC converter for X drive	X-DCDC
5 V power for SCAN	SCN5V	X-SUS	X-SUS
DC/DC converter for Y drive	Y-DCDC	DIG-DCDC	D-DCDC
Y-SUS	Y-SUS	Unknown	UNKNOW

[1-4] SHUT DOWN

- The shutdown history of panel section is displayed. No other layers are nested below this layer, and there are no adjustment items.


PANEL FACT. IN1-30602-RGB-JHB
AREA SHUT DOWN
MAIN SUB 000124H 23M
1 TMP-NG TMP-H 000124H 21M
2 SQ-LSI RTRY 000115H 05M
3 MD-DEV DAC 000107H 53M
4 SQ-LSI VER-HS 000098H 47M
5 MD-DEV BACKUP 000051H 30M
6 SQ-LSI BUSY 000012H 07M
7 H M
8 H M

■ Key operation

<DOWN> : Shifting to PANEL-1 ADJ (+)
<UP> : Shifting to POWER DOWN
<L/R> : Updating displayed information

■ Contents of the Display item

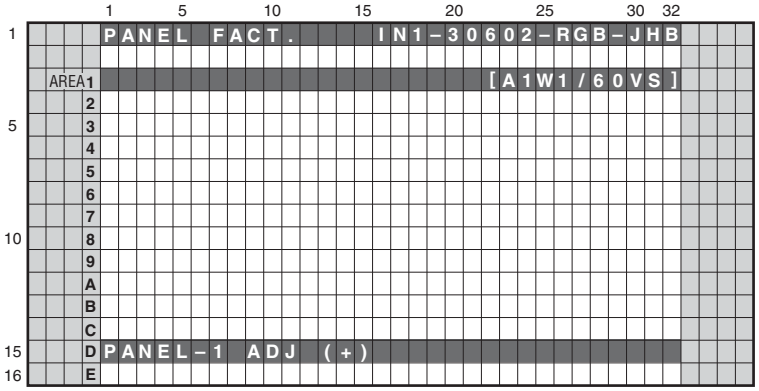
- The shutdown history is displayed. The last most 8 shutdown histories are displayed with the hour-meter values that indicate the hours when shutdowns occurred.
- When there is detail information when shutdown occurred, the possible defective part is displayed as Sub information.
- The shutdown history is not recorded when the shutdown occurred at the same place and same time.

<Cause of shutdown and corresponding OSD Indication >

Cause of shutdown (MAIN)		Cause of shutdown (SUB)	
Main cause	**OSD Indication**	**Sub cause**	**OSD Indication**
SQ_LSI	SQ_LSI	Communication Error	RTRY
		Drive Stop	SQNO
		Busy	BUSY
		Version mismatching (H/S)	VER-HS
		Version mismatching (H/M)	VER-HM
		Version mismatching (H/I)	VER-HI
MDU-DEVICE	MD-DEV	Digital EEPROM	EEPROM
		Backup EEPROM	BACKUP
		DAC IC	DAC
Abnormally in RST2 power supply	RST2	–	–
Abnormally in panel temperature	TMP-NG	High temperature of the panel	TMP-H
		Low temperature of the panel	TMP-L

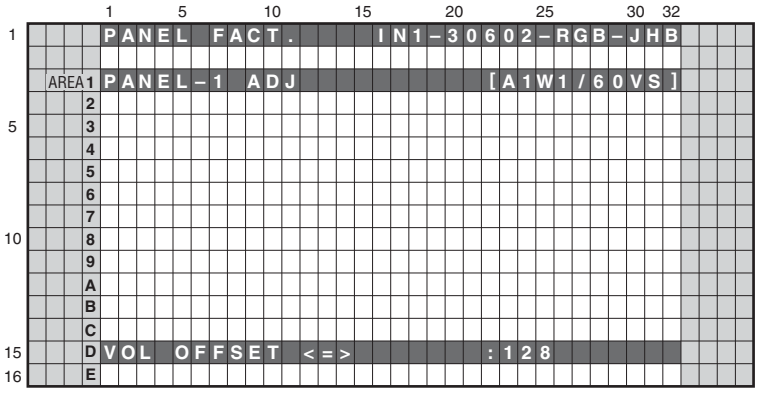
[1-5] PANEL-1 ADJ (+)

This is a page for settings for the driving voltage and AM radio countermeasures. Pressing the ENTER/SET key shifts the screen to the next nested layer below for item selection.
On third line of the screen, the white balance, ABL table, and drive sequence in the current status are displayed.
(Items that have lower layers are the same.)



■ Key operation

<DOWN> : Shifting to PANEL-2 ADJ (+)
<UP> : Shifting to POWER DOWN
<SET> : Shifting to the next nested layer



■ Key operation

<DOWN> : Shifting to the next item
<UP> : Shifting to the previous item
<RIGHT> : Adding by one to the adjustment/ setting value
<LEFT> : Subtracting by one from the adjustment/setting value
<VOL+> : Adding by 10 to the adjustment/ setting value
<VOL-> : Subtracting by 10 from the adjustment/setting value
<SET> : Determining the adjustment/setting value and shifting to the upper layer

When entered to this layer, panel white balance and the gamma setting become the default temporarily for setting that is necessary for voltage adjustment. Turn off the noise option function.

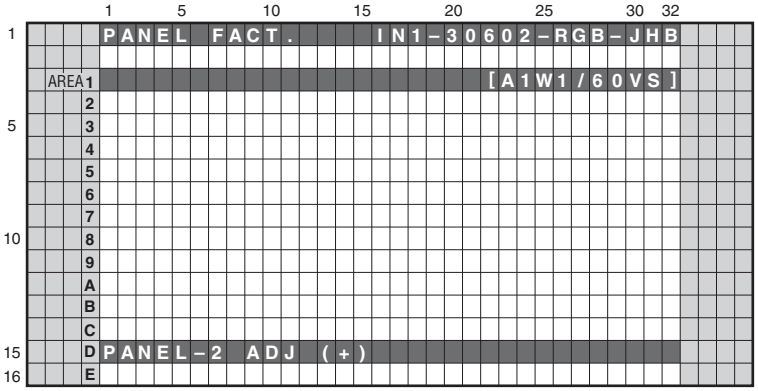
<Next nested layer of PANEL-1 ADJ (+)>

No.	Item	OSD Indication	Variable Range	Setting Value	RS-232C Command	Remarks
1	Vsus voltage	VOL SUS <=>	000 to 255	Factory adjustment value	VSU	
2	Vysnofs voltage	VOL OFFSET <=>			VOF	
3	Vyprst voltage	VOL RST P <=>			VRP	
4	Vxpofs1 voltage	VOL XPOFS1 <=>			VX1	
5	Vxpofs2 voltage	VOL XPOFS2 <=>			VX2	
6	Vyknofs1,2 voltage	VOL YKNOFS1 D <=>			V1F	
7	Vyknofs3 voltage	VOL YKNOFS3 D <=>			V3F	
8	Vyknofs4 voltage	VOL YKNOFS4 D<=>			V4F	
9	∆ Vyknofs1,2/3/4	VOL YKNOFSA D<=>			VYF	
10	First reset (wedge width)	RESET1ST_KSB <=>	112 to 144	128	R1K	Factory use item
11	Second reset (wedge width)	RESET2ND_KSB <=>			R2K	
12	1SF - Y sus tail (wedge width)	YSTL_1SF_KSB <=>			Y1K	
13	1SF - Y sus tail (resonance down width)	YSTL_1SF_HZ <=>			Y1Z	
14	3SF and later - first X sus (resonance up width)	XSUS_1ST_B <=>			X1B	
15	2SF - second Y sus (resonance up width)	YSUS_2ND_B <=>			Y2B	
16	2SF - third X sus (resonance up width)	XSUS_3RD_B <=>			X3B	
17	2SF - repeat Y sus (resonance up width)	YSUS_B <=>			YSB	
18	2SF - repeat X sus (resonance up width)	XSUS_B <=>			XSB	
19	3SF and later - Y sus tail (wedge width)	YSTL_KSB <=>			YTK	
20	3SF and later - Y sus tail (resonance down width)	YSTL_HZ <=>			YTZ	
21	2SF - Y sus tail (wedge width)	YSTL_2SF_KSB <=>			Y2K	
22	2SF - Y sus tail (resonance down width)	YSTL_2SF_HZ <=>			Y2Z	
23	3SF and later (2 pulses of SSF) - Y sus tail (wedge width)	YSTL_FMR_KSB <=>			YNK	
24	Timing between Scan and Address	SCAN ADRS ADJ <=>			SAT	
25	SUS frequency (AM radio anti-jamming)	SUS FREQ <=>	MODE1 to 8	MODE1	SFR	Note

Note: It is necessary to turn OFF and ON the power for reflecting the setting change.

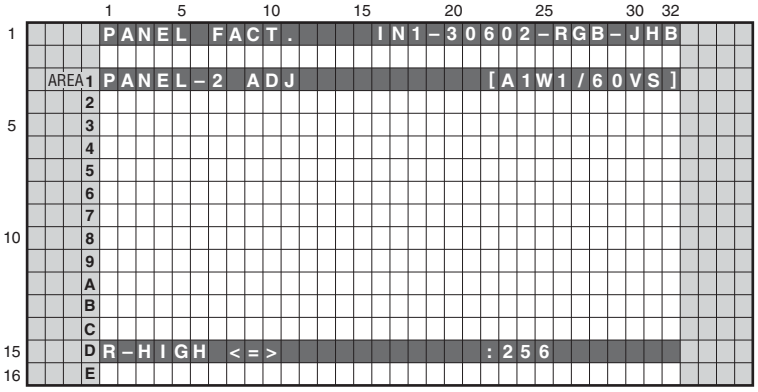
[1-6] PANEL-2 ADJ (+)

- White balance of the panel can be adjusted. Pressing the ENTER/SET key shifts the screen to the next nested layer below for item selection.



■ Key operation

<DOWN> : Shifting to PANEL FUNCTION (+)
<UP> : Shifting to PANEL-1 ADJ (+)
<SET> : Shifting to the next nested layer



■ Key operation

<DOWN> : Shifting to the next item
<UP> : Shifting to the previous item
<RIGHT> : Adding by one to the adjustment/ setting value
<LEFT> : Subtracting by one from the adjustment/setting value
<VOL+> : Adding by 10 to the adjustment/ setting value
<VOL-> : Subtracting by 10 from the adjustment/setting value
<SET> : Determining the adjustment/setting value and shifting to the upper layer

<Next nested layer of PANEL-2 ADJ (+)>

No.	Item	OSD Indication	Variable Range	Setting Value	RS-232C COMMAND	Remarks
1	Panel WB R highlight	R-HIGH <=>	000 to 999	Factory adjustment value	PRH	
2	Panel WB G highlight	G-HIGH <=>			PGH	
3	Panel WB B highlight	B-HIGH <=>			PBH	
4	Panel WB R lowlight	R-LOW <=>	000 to 999		PRL	
5	Panel WB G lowlight	G-LOW <=>			PGL	
6	Panel WB B lowlight	B-LOW <=>			PBL	
7	ABL	ABL <=>	000 to 255		ABL	

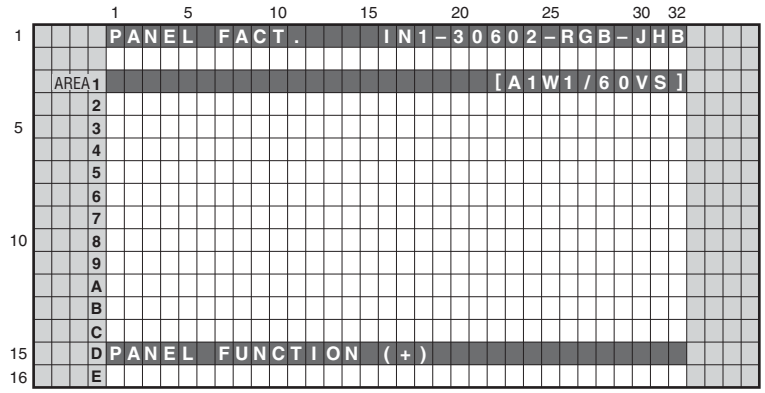
The ABL/WB adjustment values are grouped into three tables with ABL and four tables with WB, depending on the drive sequences. The adjustment value for the actually driven table is displayed. The number of the adjustment table and the drive sequence currently selected are displayed on the right side of the third line as the On-Screen display.

<ABL/WB adjustment table and Drive sequence>

ABL Table	WB Table	OSD Indication	Drive Sequence	OSD Indication	Remarks
TABLE 1	TABLE 1	A1W1	VIDEO-60Hz	60VS	
			PC-60Hz	60PS	
TABLE 2	TABLE 2	A2W2	VIDEO-48Hz	48VS	
			VIDEO-50Hz	50VS	
TABLE 3	TABLE 3	A3W3	VIDEO-72Hz	72VS	
			VIDEO-75Hz-1	75V1	
	TABLE 4	A3W4	VIDEO-75Hz-2	75V2	Correspond to MASK indication only

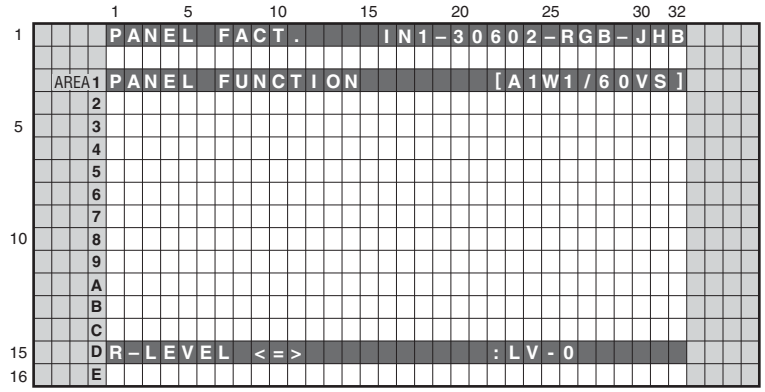
[1-7] PANEL FUNCTION (+)

- A level setting for panel degradation correction can be made. Pressing the ENTER/SET key shifts the screen to the next nested layer below for item selection.



■ Key operation

<DOWN> : Shifting to ETC.(+)
<UP> : Shifting to PANEL-2 ADJ (+)
<SET> : Shifting to the next nested layer



■ Key operation

<DOWN> : Shifting to the next item
<UP> : Shifting to the previous item
<RIGHT> : Adding by one to the adjustment/ setting value
<LEFT> : Subtracting by one from the adjustment/setting value
<SET> : Determining the adjustment/setting value and shifting to the upper layer

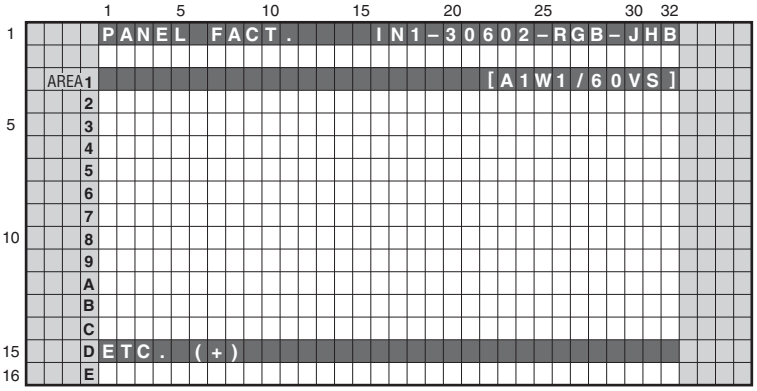
<Next nested layer of PANEL FUNCTION (+)>

No.	Item	OSD Indication	Variable Range	Setting Value	RS-232C COMMAND	Remarks
1	R deterioration correction LEVEL	R-LEVEL <=>	Lv-10 to 7	Lv-3	RRL	Factory use item (Note)
2	G deterioration correction LEVEL	G-LEVEL <=>		Lv-2	RGL	
3	B deterioration correction LEVEL	B-LEVEL <=>		Lv-0	RBL	
4	L1 address	ADDRESS L1 <=>	PH0 to 9	PH2	AP0	
5	L2 address	ADDRESS L2 <=>		PH2	AP0	
6	L3 address	ADDRESS L3 <=>		PH3	AP1	
7	L4 address	ADDRESS L4 <=>		PH1	AP1	
8	U1 address	ADDRESS U1 <=>		PH2	AP2	
9	U2 address	ADDRESS U2 <=>		PH2	AP2	
10	U3 address	ADDRESS U3 <=>		PH3	AP3	
11	U4 address	ADDRESS U4 <=>		PH1	AP3	
12	Streaking correction	STK MODE <=>	OFF to MODE1 to 8	MODE1	SKM	
13	Black display mode	FULL BLACK <=>	OFF to MODE1	MODE1	FBM	
14	Panel Rx characteristic	PANEL RX <=>	000 to 999	Factory adjustment value	PRX	Factory use item
15	Panel Ry characteristic	PANEL RY <=>	000 to 999		PRY	
16	Panel Gx characteristic	PANEL GX <=>	000 to 999		PGX	
17	Panel Gy characteristic	PANEL GY <=>	000 to 999		PGY	
18	Panel Bx characteristic	PANEL BX <=>	000 to 999		PBX	
19	Panel By characteristic	PANEL BY <=>	000 to 999		PBY	
20	Color sensor R coefficient	CLS R <=>	000 to 255	128	CSR	
21	Color sensor G coefficient	CLS G <=>	000 to 255	128	CSG	
22	Color sensor B coefficient	CLS B <=>	000 to 255	128	CSB	

Note: It is necessary to turn OFF and ON the power for reflecting the setting change.

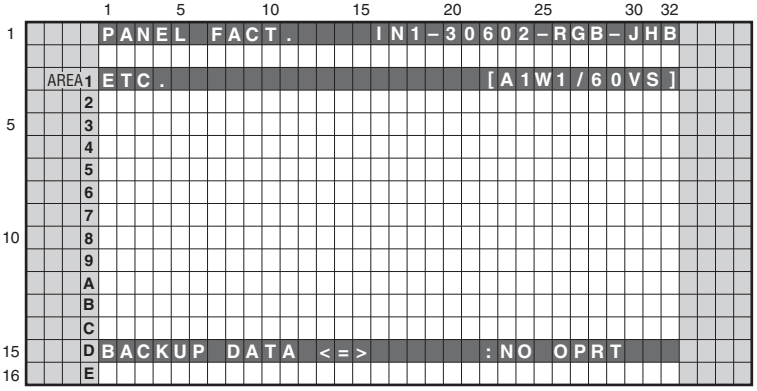
[1-8] ETC. (+)

- Clearance of various log data for the panel and changing of settings for which setting data were not stored upon last update can be performed.
  Pressing the ENTER/SET key shifts the screen to the next nested layer below for item selection.



■ Key operation

<DOWN> : Shifting to RASTER MASK SETUP (+)
<UP> : Shifting to PANEL FUNCTION (+)
<SET> : Shifting to the next nested layer



■ Key operation

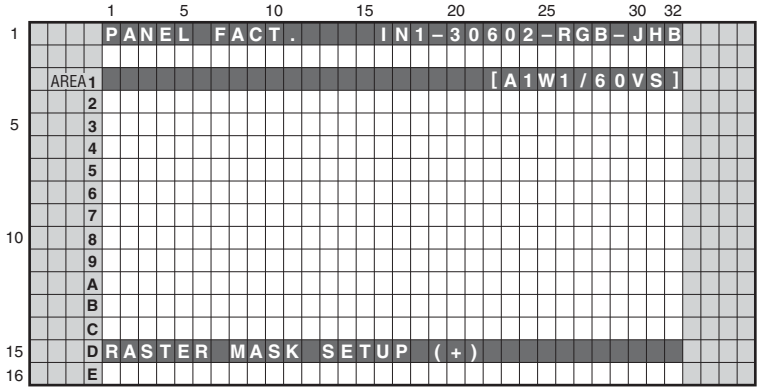
<DOWN> : Shifting to the next item
<UP> : Shifting to the previous item
<RIGHT> : Adding by one to the adjustment/setting value
<LEFT> : Subtracting by one from the adjustment/setting value
<SET> : Determining the adjustment/setting value and shifting to the upper layer

<Next nested layer of ETC (+)>

No.	Item	OSD Indication	Processing Contents	RS-232C COMMAND	Remarks
1	Backup EEPROM data	BACKUP DATA <=>	• NO OPRT (No operation) • TRANSFER (Backup data transmission)	BCP	
2	Digital EEPROM data	DIGITAL EEPROM <=>	• NO OPRT (No operation) • REPAIR (Adjustment is complete) • DELETE (Adjustment is not complete)	FAJ/UAJ	
3	PD history	PD INFO. <=>	• NO OPRT (No operation) • CLEAR (Data clear)	CPD	
4	SD history	SD INFO. <=>		CSD	
5	HOUR METER	HR-MTR INFO. <=>		CHM	
6	Pulse meter	PM/B1-B5 <=>		CPM	
7	PON counter	P COUNT INFO. <=>		CPC	
8	Maximum temperature	MAX TEMP. <=>		CMT	
9	Mirror reversing display	MIRROR <=>	• Mirror reversing display OFF • MODE1 (Right and left reversing) • MODE2 (Top and bottom reversing) • MODE3 (Right and left, Top and bottom reversing)	MIR	The indication on the menu is also highlighted. The setting is canceled upon power-off.
10	Color sensor mode	CLS <=>	• Color sensor operation OFF • Color sensor operation ON	CSF	

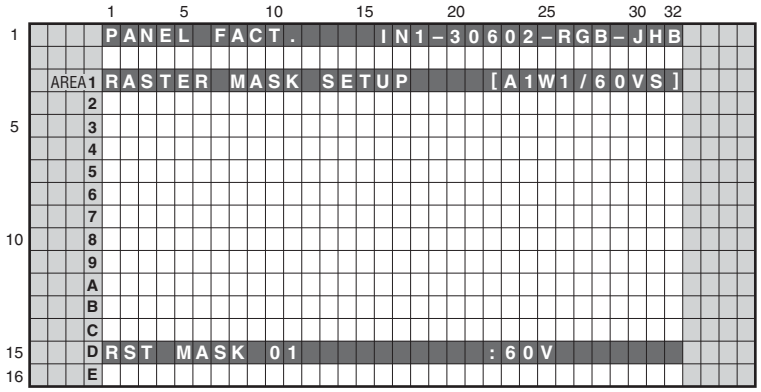
[1-9] RASTER MASK SETUP (+)

• This menu set the RASTER MASK and the drive sequence at RASTER MASK state. Pressing the ENTER/SET key shifts the screen to the next nested layer below for item selection.



■ Key operation

<DOWN> : Shifting to PATTERN MASK SETUP (+)
<UP> : Shifting to ETC. (+)
<SET> : Shifting to the next nested layer



■ Key operation

<DOWN> : Shifting to the next MASK
<UP> : Shifting to the previous MASK
<RIGHT> : Changing MASK sequence (+)
<LEFT> : Changing MASK sequence (-)
<SET> : Determining the adjustment/setting value and shifting to the upper layer

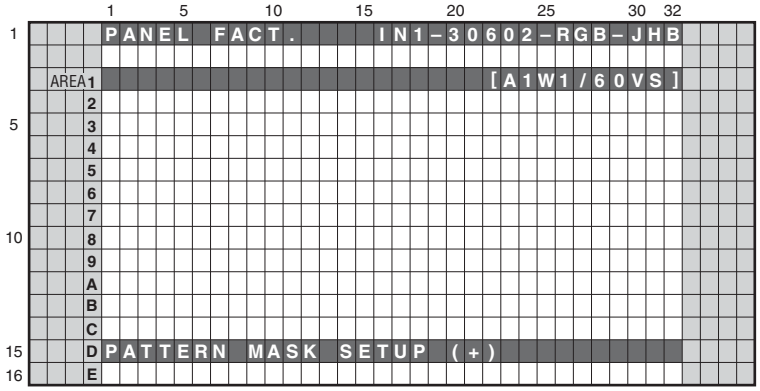
• The changed sequence and the ABL/WB table are retained until the mask is turned off.

<Next nested layer of RASTER MASK SETUP (+)>

No.	Item	OSD Indication	MASK Display Sequence	RS-232C COMMAND	Remarks
1	Mask off	MASK OFF	<=>50V<=>60V<=>60P<=> 72V<=>75V1<=>75V2<=>	MKR/VFQ	
2	Display raster mask 01	RST MASK 01 <=>			
...		...			
26	Display raster mask 25	RST MASK 25 <=>			

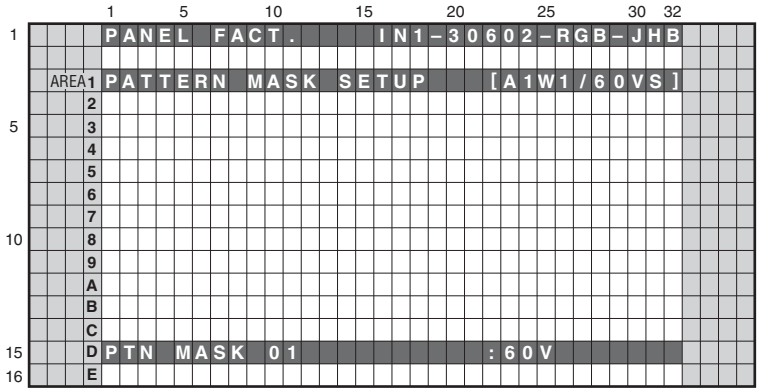
[1-10] PATTERN MASK SETUP (+)

• This menu set the PATTERN MASK and the drive sequence at PATTERN MASK state. Pressing the ENTER/SET key shifts the screen to the next nested layer below for item selection.



■ Key operation

<DOWN> : Shifting to COMBI MASK SETUP (+)
<UP> : Shifting to RASTER MASK SETUP (+)
<SET> : Shifting to the next nested layer



■ Key operation

<DOWN> : Shifting to the next MASK
<UP> : Shifting to the previous MASK
<RIGHT> : Changing MASK sequence (+)
<LEFT> : Changing MASK sequence (-)
<SET> : Determining the adjustment/setting value and shifting to the upper layer

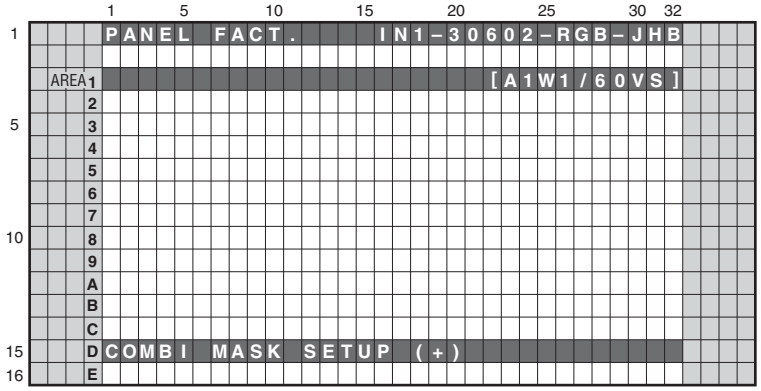
• The changed sequence and the ABL/WB table are retained until the mask is turned off.

<Next nested layer of PATTERN MASK SETUP (+)>

No.	Item	OSD Indication	MASK Display Sequence	RS-232C COMMAND	Remarks
1	Mask off	MASK OFF		MKS/VFQ	
2	Display raster mask 01	PTN MASK 01 <=>	<=>50V<=>60V<=>60P<=> 72V<=>75V1<=>75V2<=>		
...		...			
50	Display raster mask 49	PTN MASK 49 <=>			

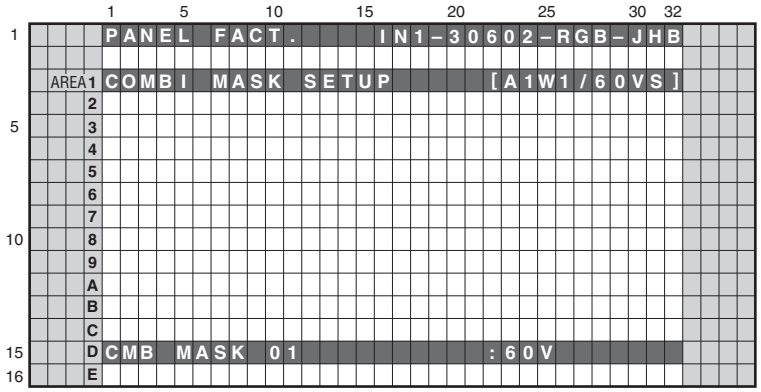
[1-11] COMBI MASK SETUP (+)

• This menu set the COMBI MASK and the drive sequence at COMBI MASK state. Pressing the ENTER/SET key shifts the screen to the next nested layer below for item selection.



■ Key operation

<DOWN> : Shifting to PANEL INFORMATION
<UP> : Shifting to PATTERN MASK SETUP (+)
<SET> : Shifting to the next nested layer



■ Key operation

<DOWN> : Shifting to the next MASK
<UP> : Shifting to the previous MASK
<RIGHT> : Changing MASK sequence (+)
<LEFT> : Changing MASK sequence (-)
<SET> : Determining the adjustment/setting value and shifting to the upper layer

• The changed sequence and the ABL/WB table are retained until the mask is turned off.

<Next nested layer of COMBI MASK SETUP (+)>

No.	Item	OSD Indication	MASK Display Sequence	RS-232C COMMAND	Remarks
1	Mask off	MASK OFF		MKC/VFQ	
2	Display raster mask 01	CMB MASK 01 <=>	<=>50V<=>60V<=>60P<=> 72V<=>75V1<=>75V2<=>		
...		...			
18	Display raster mask 17	CMB MASK 17 <=>			

[2] PANEL MAIN FACT.

■ Operation Items in the PANEL MAIN FACT. Menu

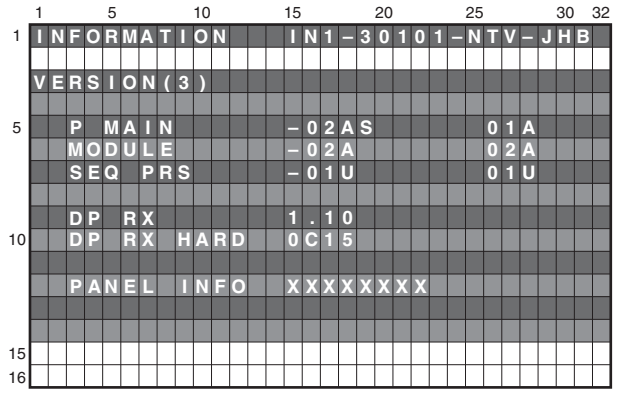
On the PANEL MAIN FACT. menu screen, acquisition of information on and settings for the display main unit can be performed, as shown in the table below:

No.	Indication	Description of functions
[2-1]	VERSION (3)	To indicate the versions of the microcomputers for the display (incl. those for the display main unit)
[2-2]	PM NG INFO.	To indicate the shutdown history of the display main unit
[2-3]	PM STATE INFO.	To indicate temperatures of the display main unit, state of the fans, brightness, and model information
[2-4]	DP_RX INFO.	Data on the DP receiver
[2-5]	PM_SETUP (+)	To clear the history and perform function settings whose data are not retained after the unit is turned off
[2-6]	PM_BEZEL_SETUP	To perform the bezel setup
[2-7]	PM_NG_CLEAR	To clear the shutdown history

■ Description of Indications on Each Layer

[2-1] VERSION (3)

The versions of the microcomputers for the display (incl. those for the display main unit) are indicated on the VERSION (3) screen. No other layers are nested below this layer, and there are no adjustment items.
Although the description on the VERSION (3) screen is included in the PANEL MAIN FACT. section, this screen actually belongs to the INFORMATION layer.

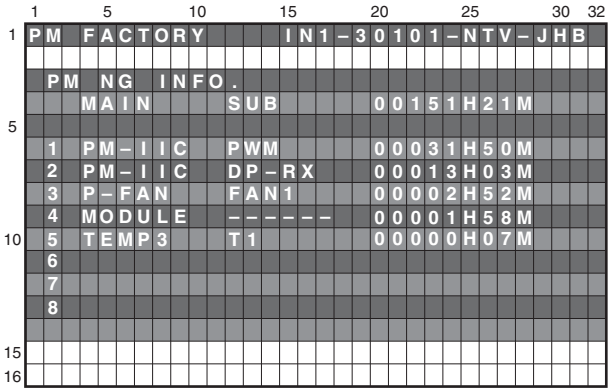


■ Contents of the Display item

- P MAIN: Version of the writing data for the Panel Main microcomputer
- MODULE: Version of the writing data for the Module microcomputer
- SEQ PRS: Version of the writing data for the sequence LSI
- DP RX: Version of the writing data for the DP receiver firmware
- DP RX HARD: Version of the hardware for the DP receiver
- PANEL INFO: Information on the display panel

[2-2] PANEL MAIN NG INFORMATION

The shutdown history of the display main unit is indicated on the PM NG INFO. screen.
No other layers are nested below this layer.



■ Key operation

<DOWN> : Shifting to PM STATE INFO.
<L/R> : Updating displayed information

■ Contents of the Display item

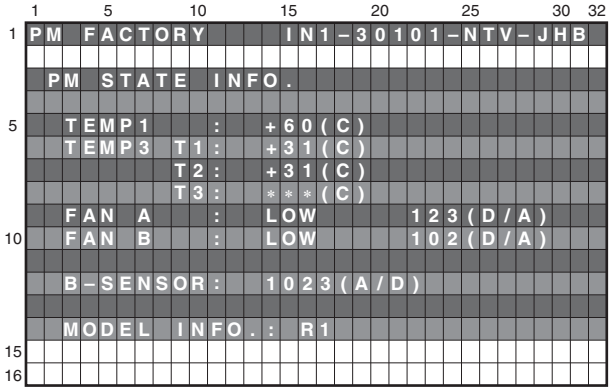
- The last 8 shutdown logs for the display are displayed with the latest log at the top and with hour-meter values that indicate when shutdowns occurred.
- If there was detailed information when a shutdown occurred, the possible defective part is displayed as Sub information.
- The shutdown history is not recorded if the shutdown was initiated for the same reason and at the same time as the previous shutdown.

<Cause of shutdown and corresponding OSD Indication >

Cause of shutdown (MAIN)		Cause of shutdown (SUB)	
Main cause	**OSD Indication**	**Sub cause**	**OSD Indication**
D-Amp/Short-circuiting of the speakers	AUDIO	A_NG	AUDIO
		OTW	OTW
Module microcomputer	MODULE	–	------
IIC communication of the Panel Main microcomputer	PM-IIC	DP_Rx	DP_Rx
		PWM_Processor	PWM
Abnormality in the fans	P-FAN	FAN_NG_A="H"	FAN1
		FAN_NG_B="H"	FAN2
High temperature of the display unit	TEMP3	High temperature at Temperature Sensor 1	T1
		High temperature at Temperature Sensor 2	T2
Power supply of the POWER SUPPLY Unit	MB-POW	VCC power decreaseof the MAIN Assy	RELAY

[2-3] PANEL MAIN STATE INFORMATION

The display (unit) temperatures detected by the temperature sensors, FAN rotating status, the value acquired by the Room Light Sensor, and settings for the model are indicated.
No other layers are nested below this layer.



■ Key operation

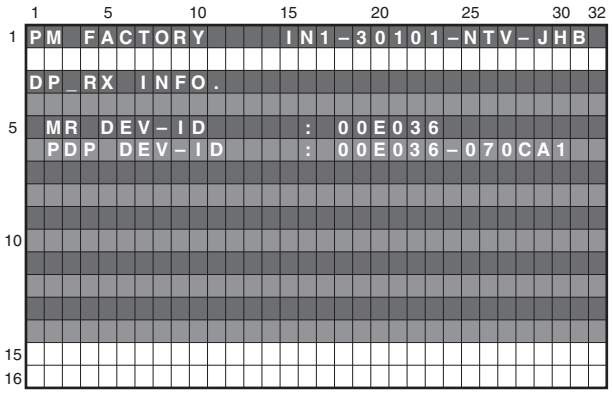
<DOWN> : Shifting to DP_RX INFO.
<UP> : Shifting to PM NG INFO.
<L/R> : Updating displayed information

■ Contents of the Display item

- TEMP1: The current display (panel) temperature is indicated. Temperature is in °C (Centigrade).
- TEMP3, T1-T2, T3 (reserved): The current display (unit) temperature is indicated. Temperature is in °C (Centigrade).
- FAN A, B: Controlled state of the fans (HIGH, LOW, STOP), D/A value
- B-SENSOR: A/D value of the Room Light Sensor
- MODEL INFO.: Model information, such as setup status of the bezel

[2-4] DP-RX INFORMATION

This screen is for use by engineers.
No other layers are nested below this layer.

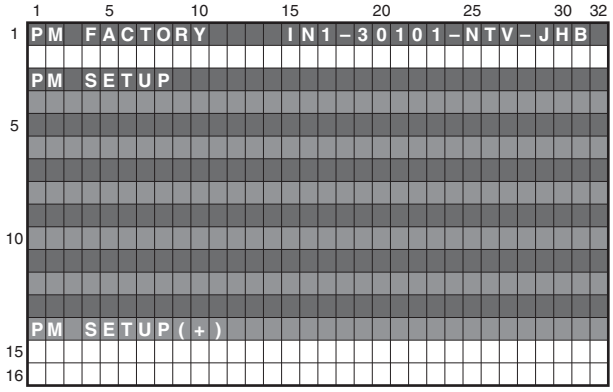


■ Key operation

<DOWN> : Shifting to PM_SETUP (+).
<UP> : Shifting to PM STATE INFO.
<L/R> : Updating displayed information

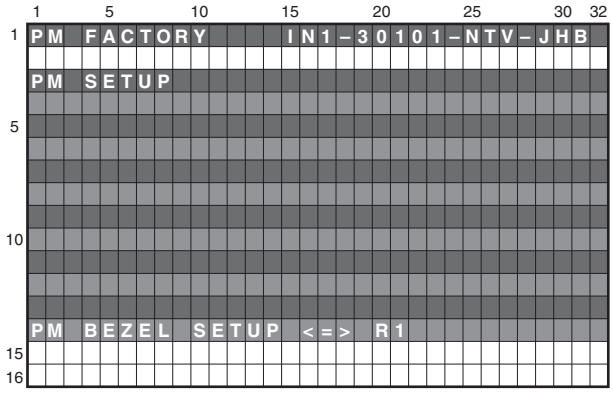
[2-5] PANEL MAIN SETUP (+)

The shutdown logs can be cleared, and temporary settings for functions that you do not wish to retain after the unit is turned off can be performed. Pressing the ENTER/SET key shifts the screen to the next nested layer below for item selection.



■ Key operation

<UP> : Shifting to DP_RX INFO.
<ENTER/SET> : Shifting to the next nested layer



■ Key operation

<DOWN> : Shifting to the next item
<UP> : Shifting to the previous item
<RIGHT> : Changing the setting value upward (+)
<LEFT> : Changing the setting value upward (-)
<ENTER/SET> : Determining the changed value and return to the layer above

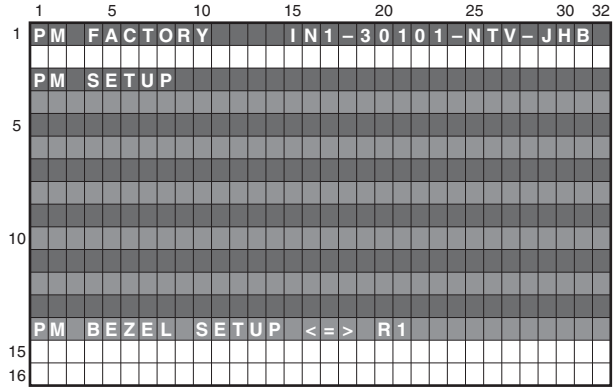
<Next nested layer of PANEL MAIN SETUP (+)>

No.	Item	OSD Indication	Content	RS-232C COMMAND	Remarks
1	Bezel setting	PM_BEZEL_SETUP <=>	• NO OPRT (No operation) • R1 (Bezel setting 1) Black KRP-500P/WYSIXK5, WYS5, LFT, WA5 • R2 (Bezel setting 2) White No use • R3 (Bezel setting 3) Beige No use • EP (For use by engineers)	BZS	
2	SD history clear (panel main)	PM NG CLEAR <=>	• NO OPRT (No operation) • CLEAR (Clearance of data)	CAL	

[2-6] PANEL MAIN BEZEL SETUP

Setup of the bezel can be performed on the PANEL MAIN BEZEL SETUP screen.

- Without the Panel Main Bezel setup, detection by the Room Light Sensor will not be performed properly.
- Even if Final setup (in System Operation mode [FSTS35] or in Display Standalone Operation mode [FSP]) is performed, the initial value (R1) will not be restored.



■ Key operation

<DOWN> : Shifting to the next item
<UP> : Shifting to the previous item
<RIGHT> : Changing the setting value upward (+)
<LEFT> : Changing the setting value upward (-)
<ENTER/SET> : Determining the changed value and return to the layer above

Select the bezel setup setting, using the L or R key, then press the SET key to determine the setting.
When NO OPT is selected, bezel setup is not performed.

Each time the L or R key is pressed, setup settings are changed, as shown below:

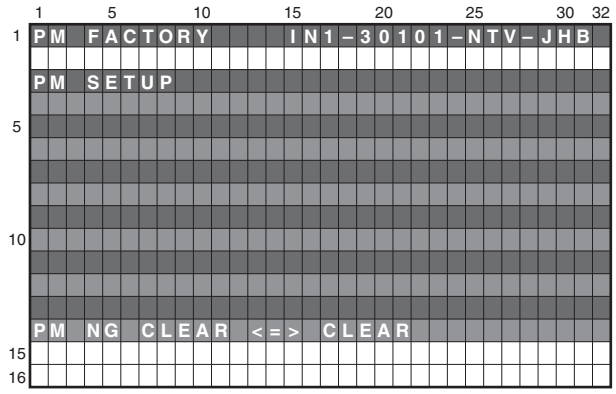
R1 ↔ R2 ↔ R3 ↔ EP ↔ NO OPT

"NO OPT" is selected immediately after the PANEL MAIN BEZEL SETUP screen is displayed.

R1: The bezel setup is performed according to ROM table 01. (Default)
R2: The bezel setup is performed according to ROM table 02.
R3: The bezel setup is performed according to ROM table 03.
EP: The bezel setup is performed according to the EEPROM table. (For use by engineers)
NO OPT: Bezel setup is not performed.

[2-7] PANEL MAIN NG CLEAR

The shutdown logs can be cleared on the PM NG CLEAR screen.



■ Key operation

<DOWN> : Shifting to the next item
<UP> : Shifting to the previous item
<RIGHT> : Changing the setting value upward (+)
<LEFT> : Changing the setting value upward (-)
<ENTER/SET> : Determining the changed value and return to the layer above

"NG CLEAR" denotes clearing of the SD logs managed by the Panel Main microcomputer.

Select the setting, using the L or R key, then press the ENTER/SET key to clear the data.
When NO OPT is selected, NG CLEAR is not performed.

Pressing the L or R key toggles between CLEAR and NO OPT, as shown below:

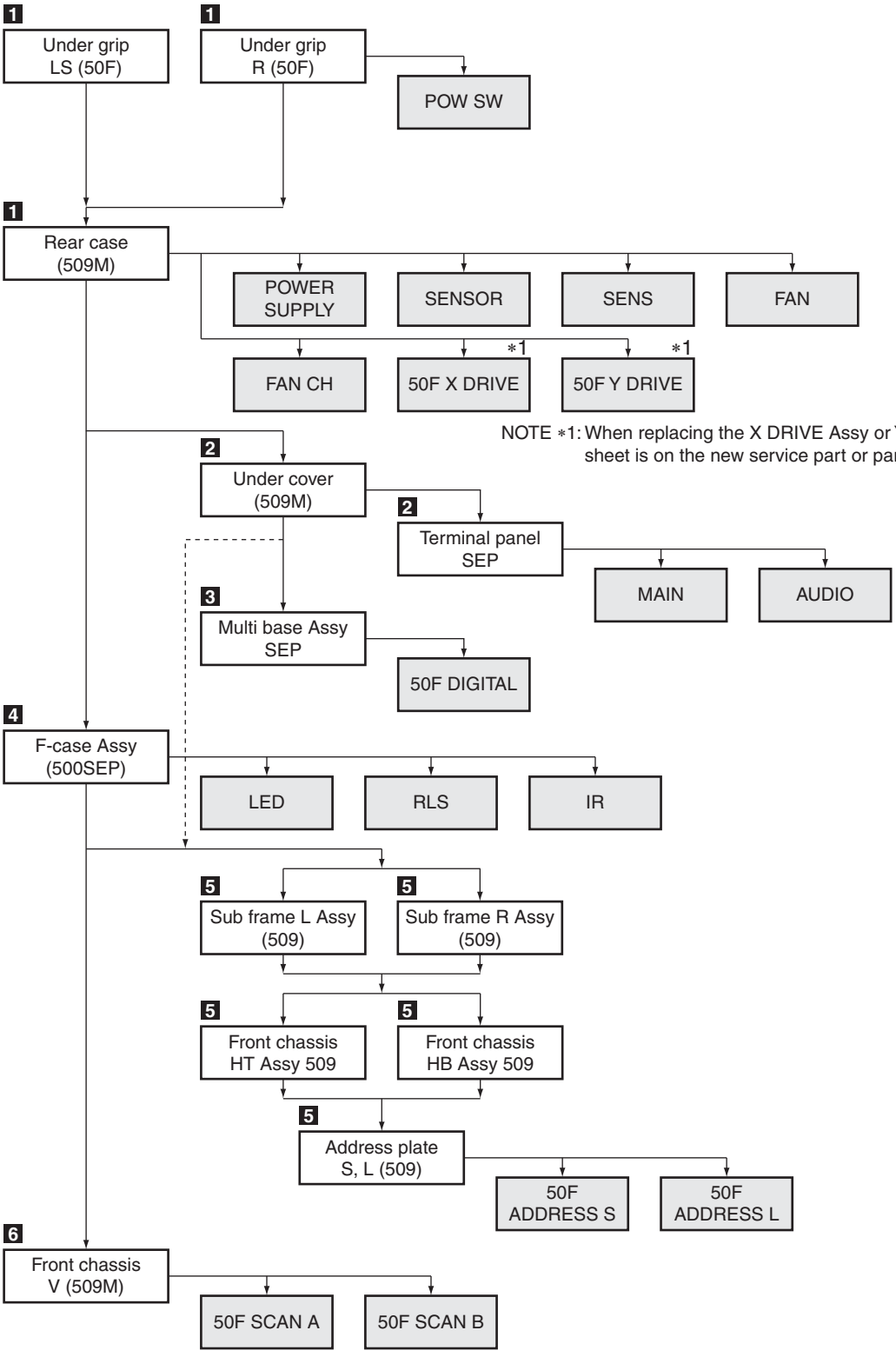
CLEAR ↔ NO OPT

7. DISASSEMBLY
7.1 FLOWCHART OF REMOVAL ORDER

Note: Even if the unit shown in the photos and illustrations in this manual may differ from your product, the procedures described here are common.

Flowchart of removal order for the main parts and boards

It is efficient to proceed with removal of the main parts and boards in the order shown in the chart below:



NOTE *1: When replacing the X DRIVE Assy or Y DRIVE Assy, check the silicon sheet is on the new service part or panel chassis.

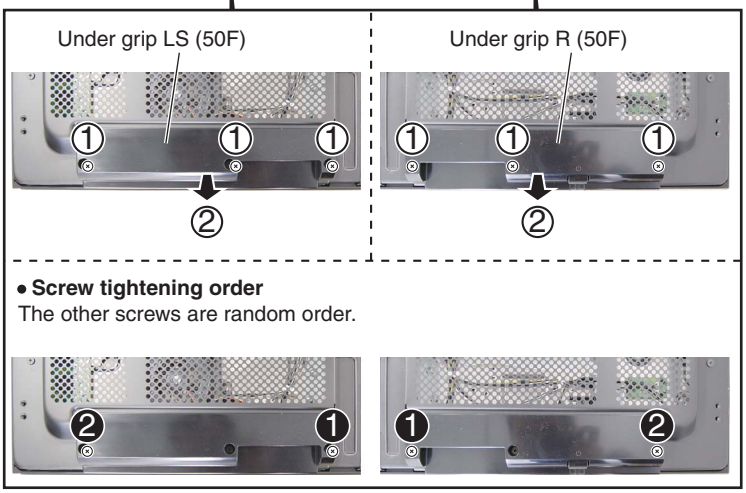
Disassembly

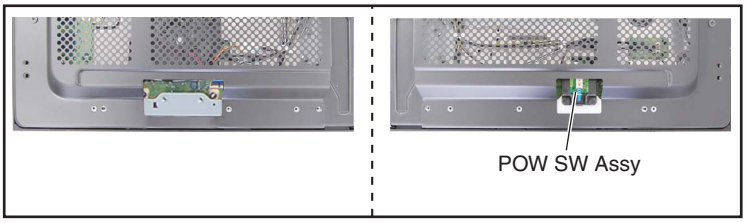
1 Rear Case (509M)

● **Under grip LS (50F) and R (50F)**

① Remove the six N grip screws. (ABA1381)

② Remove the under grips LS (50F) and R (50F).





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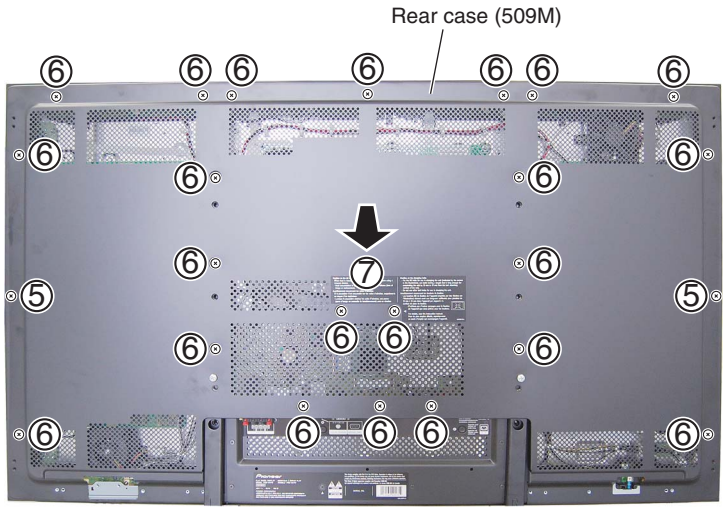
● **Rear case (509M)**

⑤ Remove the two screws. (ABA1380)

⑥ Remove the 22 N grip screws. (ABA1381)

⑦ Remove the rear case (509M).

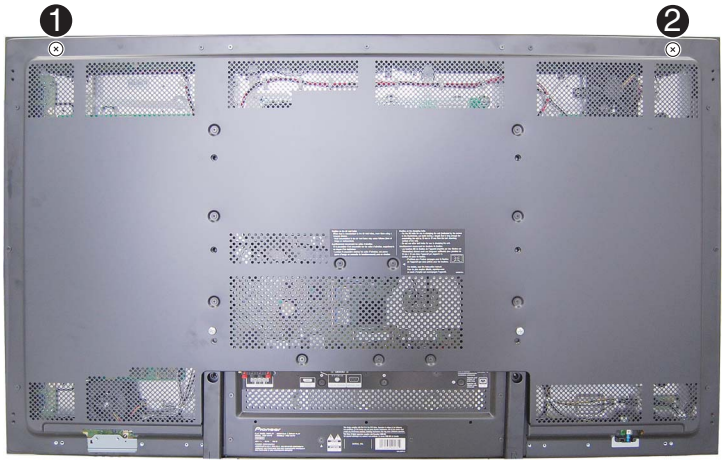


• **Reference**

ABA1380 ABA1381

• **Screw tightening order**

The other screws are random order.



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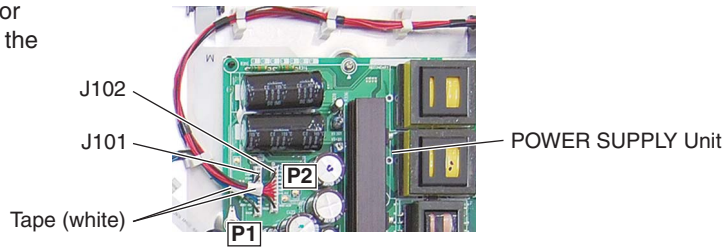
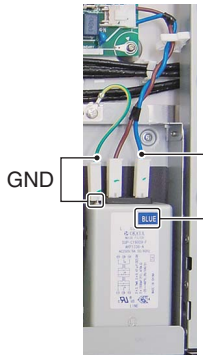
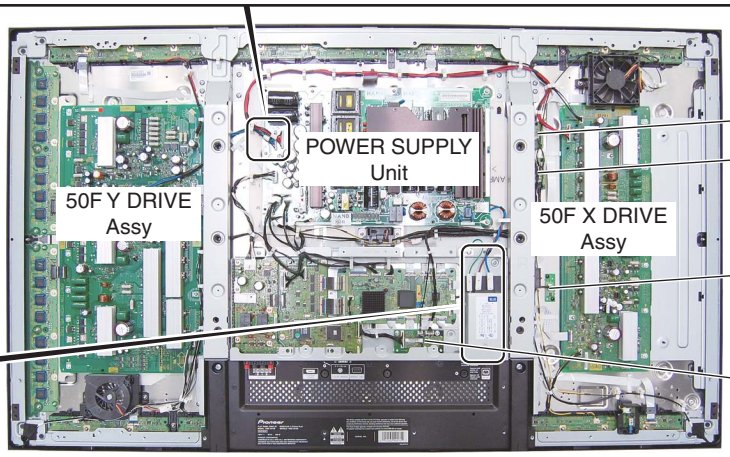
Notes on Lead Dressing

Note: The wiring shown in the photo is different from the actual wiring, because the product in the photo is a prototype. Upon servicing, be sure to restore the original wiring of the unit after repair work.

The J101 and J102 cables require correct orientation for connection. Connect the connectors with white tape to the POWER SUPPLY Unit.







Notes on Removing the POWER SUPPLY Unit

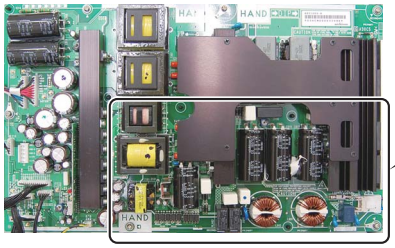
Discharge of residual electric charge
Immediately after the power cord is unplugged, residual electric charge remains for about 3-5 minutes in the capacitor inside the POWER SUPPLY Unit.
Before removing the POWER SUPPLY Unit, make sure that residual electric charge has fallen to a safe level.

How to discharge residual electric charge rapidly
Discharge residual electric charge by connecting two 220 Ω (10 W) forced discharging resistors (440 Ω in total,) one to each end, of C101.

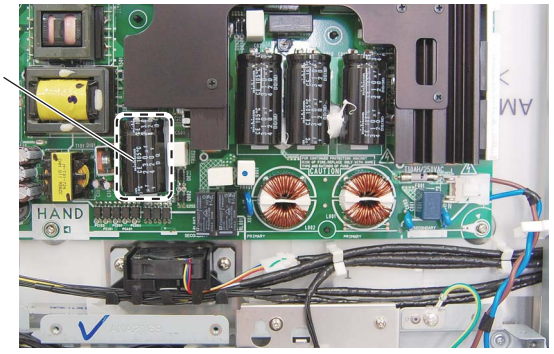
<How to remove the POWER SUPPLY Unit>

① Make sure that the power cord is unplugged. Check the voltage of both ends of C101, using a tester.
② Wait until the voltage at both ends of C101 has fallen to 5 V or less.
③ When the voltage becomes less than 5 V, disconnect the connectors of the POWER SUPPLY Unit then remove it.

POWER SUPPLY Unit



Points of checking residual electric charges:
After making sure that the voltage of both ends of C101 has fallen to 5 V or less, remove the POWER SUPPLY Unit.

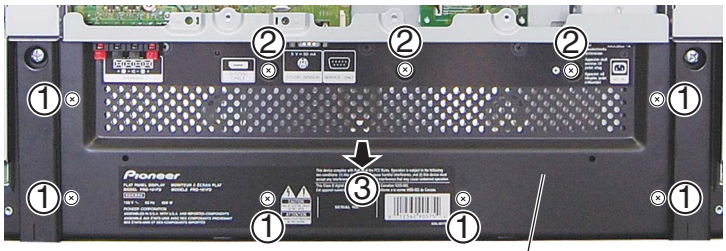


2 MAIN and AUDIO Assys

Note: The wiring shown in the photo is different from the actual wiring, because the product in the photo is a prototype. Upon servicing, be sure to restore the original wiring of the unit after repair work.

● Under cover (509M)

① Remove the six N grip screws. (ABA1381)
② Remove the three screws. (ABA1389)
③ Remove the under cover (509M).

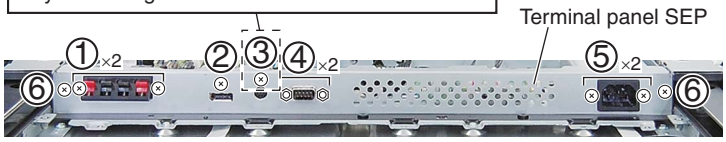


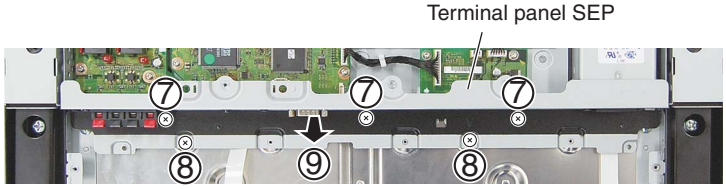
• Screw tightening order
The other screws are random order.

● Terminal panel SEP

① Remove the two screws. (BPZ30P080FTB)
② Remove the one screw. (AMZ30P060FTB)
③ Remove the one screw. (BMZ30P060FTB)
④ Remove the two hexagon headed screws. (ABA1382)
⑤ Remove the two N grip screws. (ABA1381)(KRP-500P/WYSIXK5)
Remove the two screws. (AMZ30P060FTB)(KRP-500P/WYS5, LFT, WA5)
⑥ Remove the two N grip screws. (ABA1381)

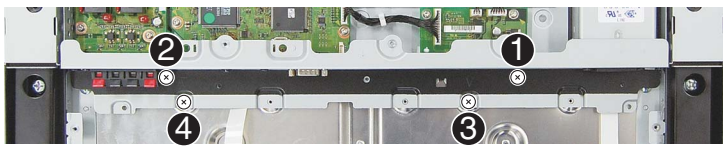
Note:
Do not use an electric screwdriver.
If the screw is over-tightened, the screw thread may be damaged.





⑦ Remove the three N grip screws. (ABA1381)
⑧ Remove the two screws. (ABZ30P080FTC)
⑨ Remove the terminal panel SEP.

• Screw tightening order
The other screws are random order.



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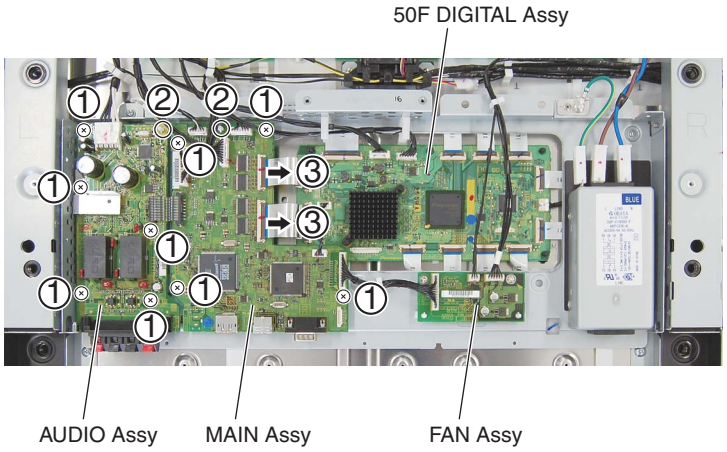
● MAIN and AUDIO Assys

① Remove the nine screws. (PMB30P060FNI)

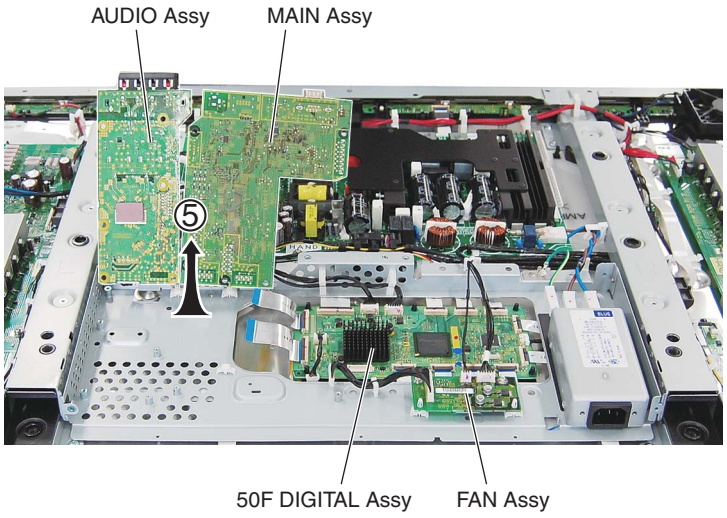
② Release the two PCB spacers (reuse).

③ Disconnect the two flexible cables.

④ Disconnect cables, connectors, as requied.



⑤ Lift the MAIN and AUDIO Assys to the direction of the arrow.



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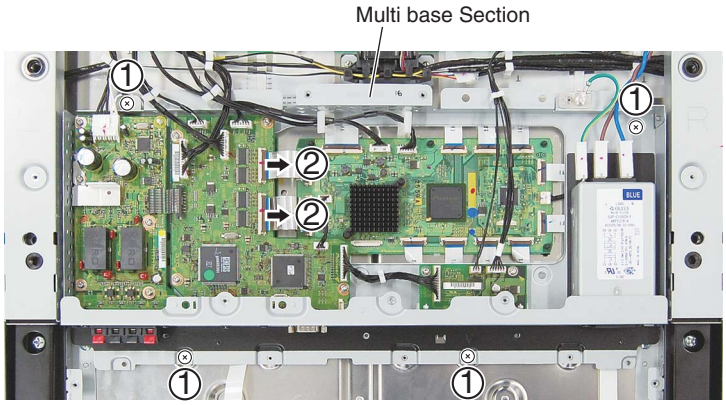
3 50F DIGITAL Assy

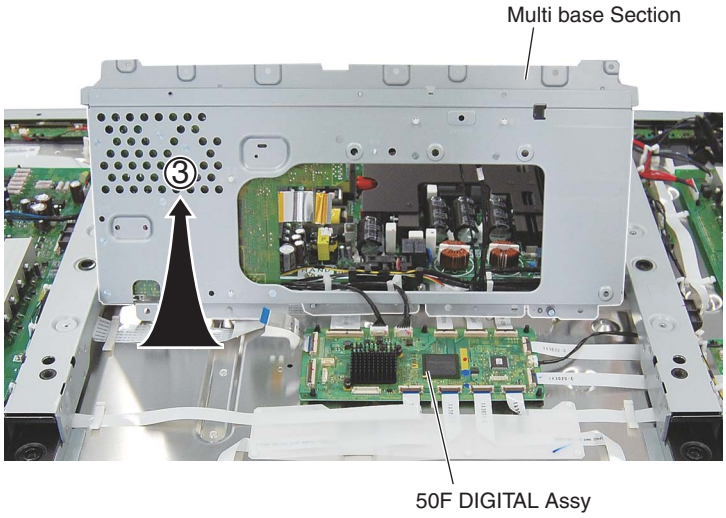
Note: The wiring shown in the photo is different from the actual wiring, because the product in the photo is a prototype. Upon servicing, be sure to restore the original wiring of the unit after repair work.

Note:
When you remove whole Multibase Section, it is not necessary to remove terminal panel SEP.

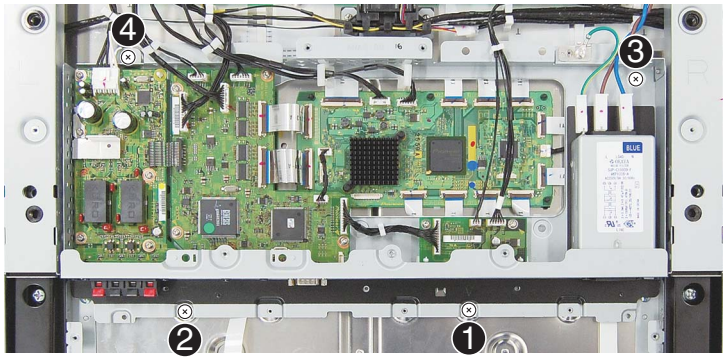
① Remove the four screws. (ABZ30P080FTC)
② Disconnect the two flexible cables.



③ Lift the multi base section to the direction of the arrow.



• **Screw tightening order**



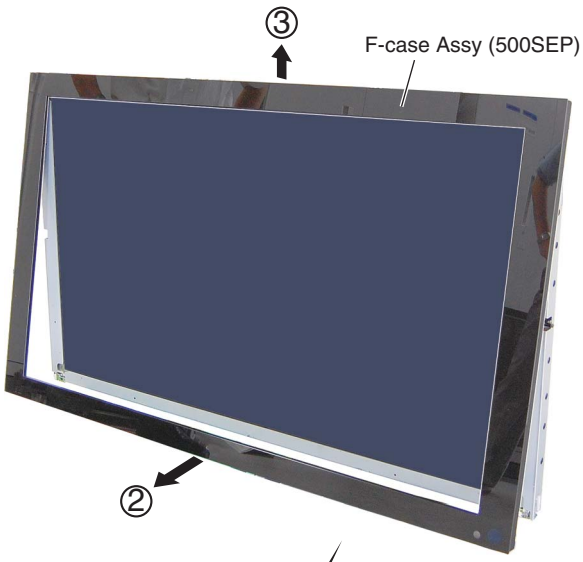
KRP-500P

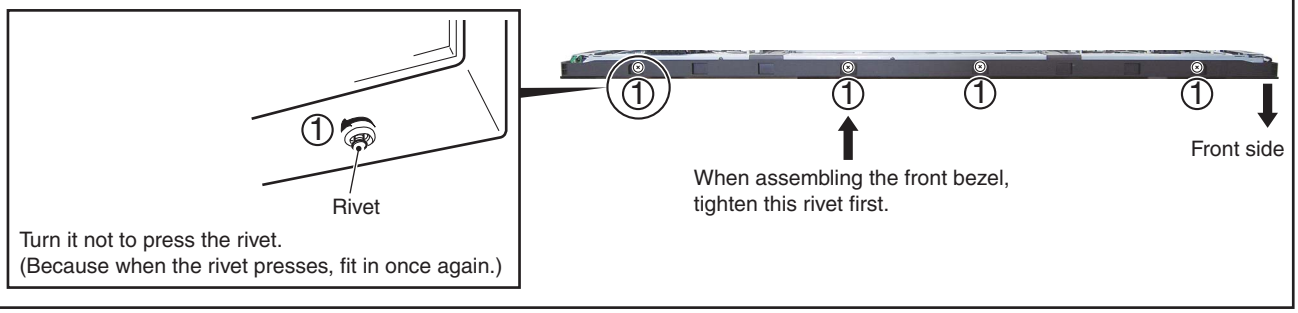
4 F-Case Assy (500SEP)

① Remove the four rivets.

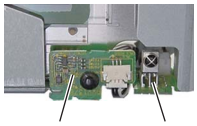
② Pull the lower part of the F-case Assy (500SEP) toward you and out.

③ Remove the F-case Assy (500SEP), by pulling it upward.





LED Assy


RLS Assy IR Assy

KRP-500P

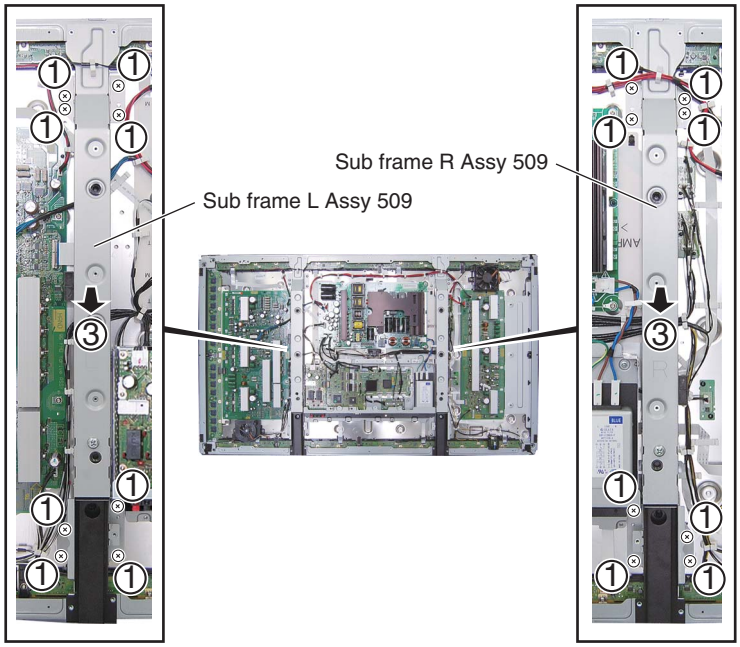
5 Access to 50F ADDRESS L and S Assys

● **Sub frame L and R Assy (509)**

① Remove the 16 screws. (TBZ40P060FTC)

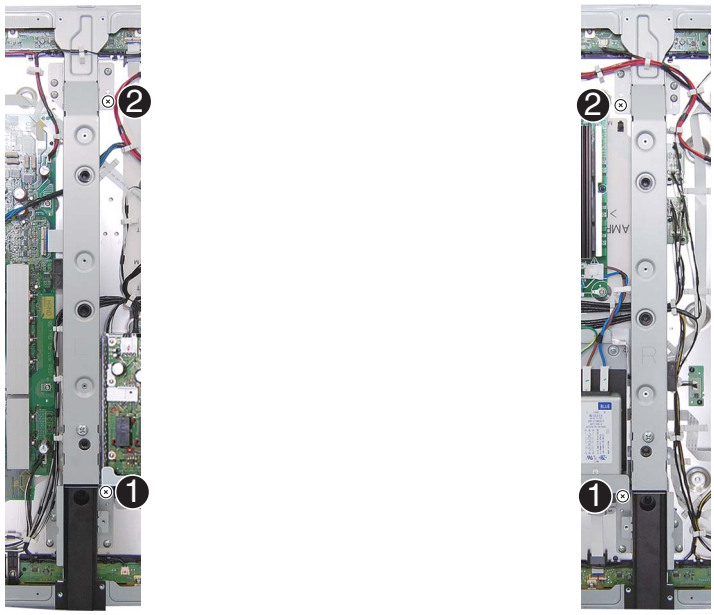
② Disconnect cables, connectors, as requied.

③ Remove the sub frame L and R Assys (509).



• **Screw tightening order**

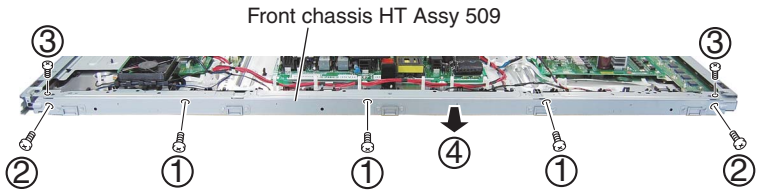
The other screws are random order.



KRP-500P

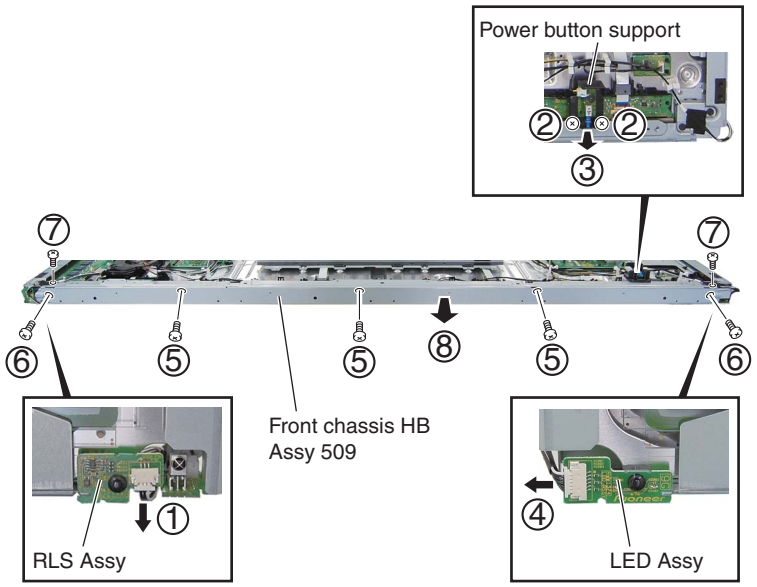
● Front chassis HT Assy 509

① Remove the three screws. (APZ30P080FTB)
② Remove the two screws. (ABZ30P080FTC)
③ Remove the two N grip screws. (ABA1381)
④ Remove the front chassis HT Assy 509.



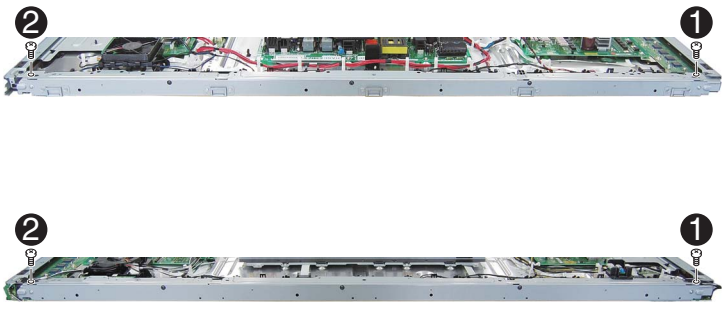
● Front chassis HB Assy 509

① Disconnect the one connector.
② Remove the two N grip screws. (ABA1381)
③ Remove the power button support.
④ Disconnect the one connector.
⑤ Remove the three screws. (APZ30P080FTB)
⑥ Remove the two screws. (ABZ30P080FTC)
⑦ Remove the two N grip screws. (ABA1381)
⑧ Remove the front chassis HB Assy 509.



• Screw tightening order

The other screws are random order.

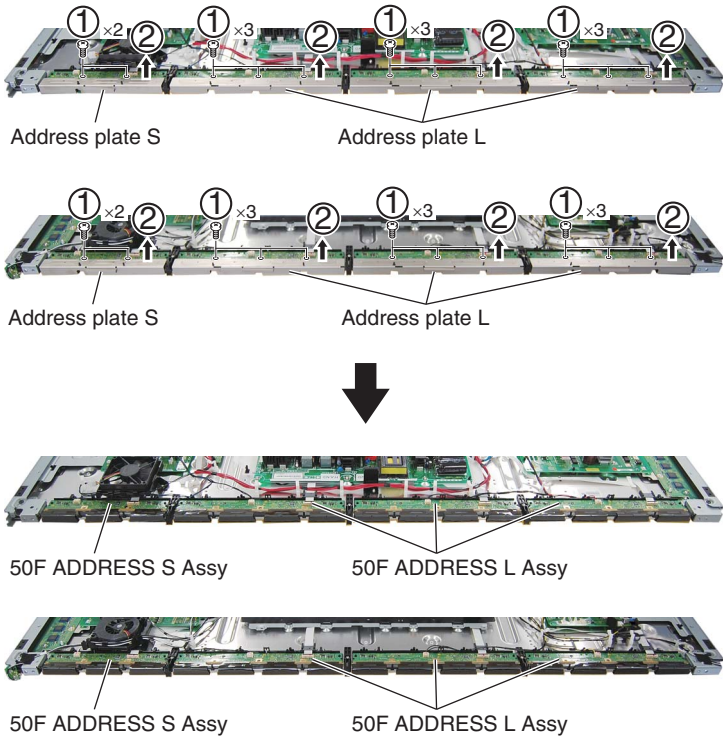


KRP-500P

● **Address plate S and L**

① Remove the 22 screws. (ABA1351)

② Remove the two address plates S and six address plates L.



6 Access to 50F SCAN A and B Assys

● **Front chassis V (509M)**

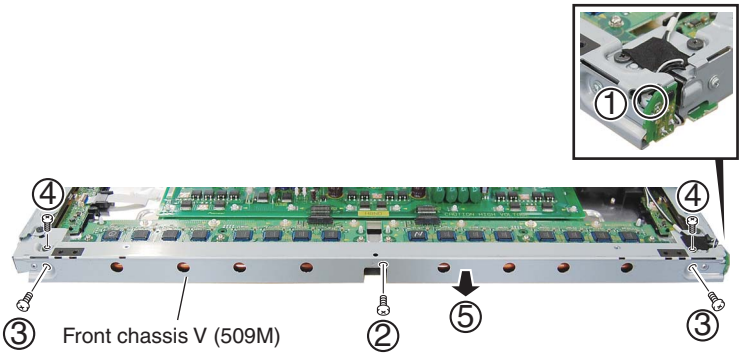
① Disconnect the one connector.

② Remove the one screw. (APZ30P080FTB)

③ Remove the two screws. (ABZ30P080FTC)

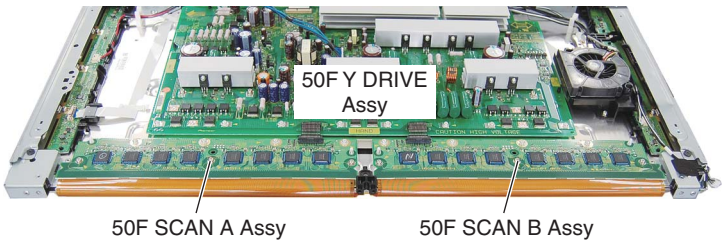
④ Remove the two N grip screws. (ABA1381)

⑤ Remove the front chassis V (509M).



• **Screw tightening order**

The other screws are random order.



8. EACH SETTING AND ADJUSTMENT

1. At shipment, the unit is adjusted to its best conditions. Normally, it is not necessary to readjust even if an assembly is replaced. If the adjustment is shifted or if it becomes necessary to readjust because of part replacement, etc., perform the adjustment as described below.
2. Any value changed in Service/Factory mode will be stored in memory as soon as it is changed. Before readjustment, take note of the original values for reference in case you need to restore the original settings.
3. Use a stable AC power supply.

8.1 ADJUSTMENT REQUIRED WHEN THE UNIT IS REPAIRED OR REPLACED

■ When any of the following assemblies is replaced

POWER SUPPLY Unit	Refer to “8.3 HOW TO CLEAR HISTORY DATA” .
DIGITAL Assy	Writing of backup data is required. Refer to the “8.2 BACKUP OF THE EEPROM (DIGITAL ASSY)”.
X DRIVE Assy	No adjustment required
Y DRIVE Assy	No adjustment required
Service Panel Assy	Refer to “8.3 HOW TO CLEAR HISTORY DATA” and “8.4 ADJUSTMENTS WHEN THE SERVICE PANEL ASSY IS REPLACED”.
MAIN Assy (Note)	No adjustment required
AUDIO Assy	No adjustment required
SENSOR Assy	Writing of backup data is required. Refer to the “8.2 BACKUP OF THE EEPROM (DIGITAL ASSY)”.
Other assemblies	No adjustment required

Note: After replacing the MAIN Assy, be sure to perform the FINAL SETUP.
To perform the FINAL SETUP for the display main unit and module via the RS-232C connector on the display, set the unit to Standalone Operation mode, by issuing the SYSS00 command, then issue the FAY command then FSP command. (Common to models of any size and for any destination)
To perform the FINAL SETUP of the entire system, i.e., the display and the Media Receiver (MR), input commands via the RS-232C connector on the MR in System Operation mode.
For details, refer to the service manual of the Media Receiver.

■ When any of the following parts is replaced

Notes on replacing parts

For the parts described in the list below, replacement is required for the whole Assy, not only the defective part.
If any part listed below is identified as defective and needs replacement, replace the whole Assy, and make necessary adjustments after replacement.

PCB Assy No.	Assy Name	Parts that Require Whole-Assy Replacement		
		Ref No.	Function Name	Part No.
AWV2559	DIGITAL Assy	IC3302	Flash ROM	AGC1096
		IC3601	Flash UCOM	AGC1095
AWV2599	X DRIVE Assy	• Parts of X D-D CON BLOCK		
AWV2600	Y DRIVE Assy	• Parts of Y VF D-D CON BLOCK 1 • Parts of Y MAIN D-D CON BLOCK 1 • Parts of Y MAIN D-D CON BLOCK 2		
AWW1393	MAIN Assy	IC5001	Display port Rx IC	GM68020H-CG-K
		IC5003	EEPROM	S25FL016A0LMF013
		IC5005	EEPROM	M2404HEPROM
		IC7001	Flash UCOM	MB91F356B-G-SPE1-K
		IC7003	EEPROM	BR24L02FJ-W

Reason: The whole Assy must be replaced, because adjustments and data rewriting for the Assy at the level of production line are required.

For the parts described in the table below, replacement of individual parts is difficult, because a heat pad is provided under the bottom of the ICs.

PCB Assy No.	Assy Name	Parts that Replacement is Possible		
		Ref No.	Function Name	Part No.
AWW1393	MAIN Assy	IC4501	Regulator IC	NJM2871BF05
		IC4503	Regulator IC	PQ025ENA1ZPH
		IC4504	Regulator IC	NJM2846DL3-18
		IC7004	Regulator IC	NJM2846DL3-33
AWW1398	AUDIO Assy	IC8331	Regulator IC	NJM2846DL3-33
		IC8401	Digital Amp	TAS5122DCA
AWW1394	FAN Assy	IC1201	Regulator IC	PQ200WNA1ZPH
		IC1202	Regulator IC	PQ200WNA1ZPH

POWER SUPPLY Unit	➡	The assembly must be replaced as a unit, and no part replacement is allowed.
MAIN Assy	➡	No adjustment required
AUDIO Assy	➡	No adjustment required
DIGITAL Assy	➡	No adjustment required
X DRIVE Assy	➡	No adjustment is required after replacement of parts other than those shown in “8.5 ADJUSTMENT WHEN THE DRIVE ASSYS ARE REPLACED.
Y DRIVE Assy	➡	No adjustment is required after replacement of parts other than those shown in “8.5 ADJUSTMENT WHEN THE DRIVE ASSYS ARE REPLACED.
ADDRESS Assy	➡	No adjustment required
SENSOR Assy	➡	No adjustment required
Other assemblies	➡	No adjustment required

8.2 BACKUP OF THE EEPROM (DIGITAL ASSY)

Outline

Adjustment data are stored in the EEPROM on the DIGITAL Assy in the production process. Those adjustment data are also automatically stored in the EEPROM (for backup) on the SENSOR Assy.
If the DIGITAL Assy is replaced, those adjustment data for backup can be copied from the EEPROM on the SENSOR Assy to a new DIGITAL Assy.

Backed up data

- Drive voltage adjustment value
- Panel white balance adjustment value
- Drive waveform adjustment value
- Hour-meter count
- Pulse-meter count
- P-ON counter value
- Serial No.
- PD/SD histories

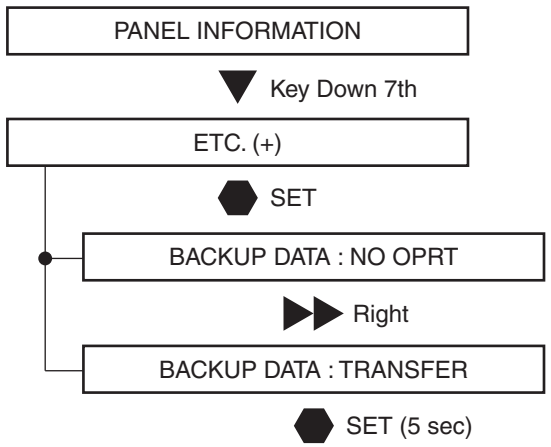
How to copy backup data

1. When the DIGITAL Assy is replaced with one for service (usual service)

Immediately after the DIGITAL Assy is replaced, the EEPROM on the DIGITAL Assy is in the status "adjustment not completed," and the EEPROM for backup on the SENSOR Assy is in the status "adjustment completed." The LED on the main unit warns you that the adjustment data in the EEPROM for backup have not been copied to the EEPROM on the DIGITAL Assy, by lighting the red LED and flashing the blue LED. In such a case, the adjustment data for backup can be used by copying the data to the EEPROM on the DIGITAL Assy, with the following procedures:

(1) Copying, using the Factory menu

① Turn on the power.
② Enter the Panel Factory mode.
③ Display the PANEL INFORMATION page, then check if "NO DATA!" is set for "DIG. EEP" and "ADJUSTED" is set for "BACKUP".
④ Copy the backup data, as shown in the figure below.



⑤ Check if "ADJUSTED" is set for "DIG. EEP" on the PANEL INFORMATION page.
⑥ Turn off the power.

(2) Copying, using the RS-232C commands

① Turn on the power.
② Issue the FAY command.
③ With the QS2 command, confirm that the main unit adjustment flag is "adjustment not completed" and that the adjustment backup flag is "adjustment completed."
④ Issue the BCP command to transfer the data stored in the EEPROM for backup.
⑤ With the QS2 command, confirm that the main unit adjustment flag becomes "adjustment completed."
⑥ Turn off the power.

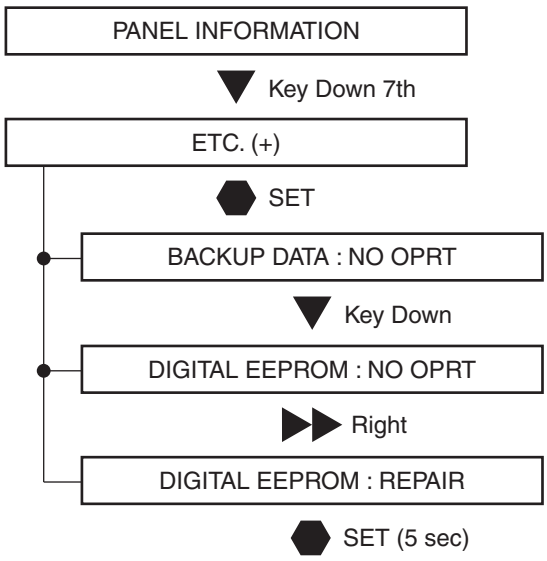
Note: If both the DIGITAL and SENSOR Assys are to be replaced, replace the SENSOR Assy first in order to store the backup data. Then turn the unit on then back off again, then replace the DIGITAL Assy.

2. When manual adjustment is required after the DIGITAL Assy is replaced with one for service

If backup data cannot be transferred to the DIGITAL Assy because of defective parts, etc., after the DIGITAL Assy is replaced and manual adjustment is performed, those manually adjusted data can be registered as adjusted data with the following procedures. Once the data on the DIGITAL Assy are registered as adjusted data, the adjustment data for backup will be automatically updated each time the unit is turned off. Therefore, if a DIGITAL Assy with adjusted data is mounted on the unit, the following procedures are not required, even after manual adjustment.

(1) Copying, using the Factory menu

① Turn on the power.
② Enter the Panel Factory mode.
③ Display the PANEL INFORMATION page, then check if "NO DATA!" is set for "DIG. EEP".
④ Register the changed adjustment data as adjusted data, as described for the following procedures, then transfer them as backup data.



⑤ Check if "ADJUSTED" is set for "DIG. EEP" on the PANEL INFORMATION page.
⑥ Turn off the power.

(2) Copying, using the RS-232C commands

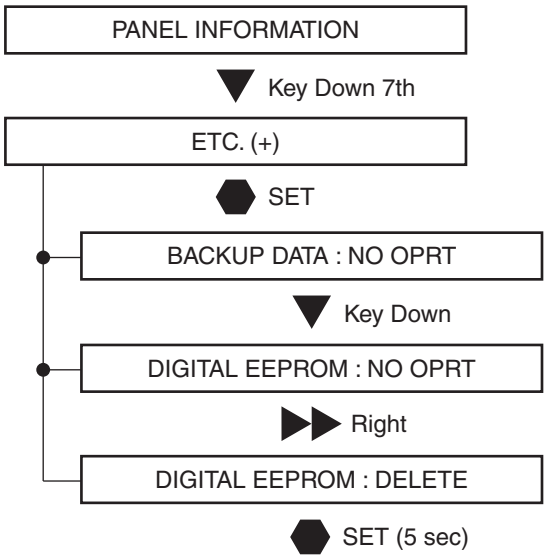
① Turn on the power.
② Issue the FAY command.
③ With the QS2 command, confirm that the main unit adjustment flag is "adjustment not completed."
④ Issue the FAJ command to register the changed adjustment data as adjusted data then transfer them as backup data.
⑤ With the QS2 command, confirm that the main unit adjustment flag becomes "adjustment completed."
⑥ Turn off the power.

3. When a secondhand DIGITAL Assy is to be reused

A DIGITAL Assy in good condition that had been mounted in another product can be reused. Before reuse, by following the procedures described below, make the data in the EEPROM on the DIGITAL Assy "adjustment not completed" data in order to prevent accidental updating of backup data when the secondhand DIGITAL Assy is mounted in another product

(1) Copying, using the Factory menu

① Turn on the power.
② Enter the Panel Factory mode.
③ Display the PANEL INFORMATION page, then check if "ADJUSTED" is set for "DIG. EEP".
④ Make the data in the EEPROM on the DIGITAL Assy "adjustment not completed" data, by following the procedures below:



⑤ Check if "NO DATA!" is set for "DIG. EEP" on the PANEL INFORMATION page.
⑥ Turn off the power.

(2) Copying, using the RS-232C commands

① Turn on the power.
② Issue the FAY command.
③ With the QS2 command, confirm that the main unit adjustment flag is "adjustment completed."
④ Issue the UAJ command to make the data in the EEPROM on the DIGITAL Assy "adjustment not completed" data.
⑤ With the QS2 command, confirm that the main unit adjustment flag becomes "adjustment not completed."
⑥ Turn off the power.

Note: If you mount a secondhand Assy to the product without performing the above procedures, the adjustment data and logs for the main unit specific to the product will be erased, and those of the secondhand Assy will be copied when the unit is turned off.

8.3 HOW TO CLEAR HISTORY DATA

■ Clearance of various logs after the Assys are replaced

Besides adjustment data, data on accumulated power-on time and logs on defective parts of the product are backed up.
Some of those data must be cleared after the Assys are replaced for service.
Clearance of those data can be performed in the ETC layer of the Factory menu or with RS232C commands.

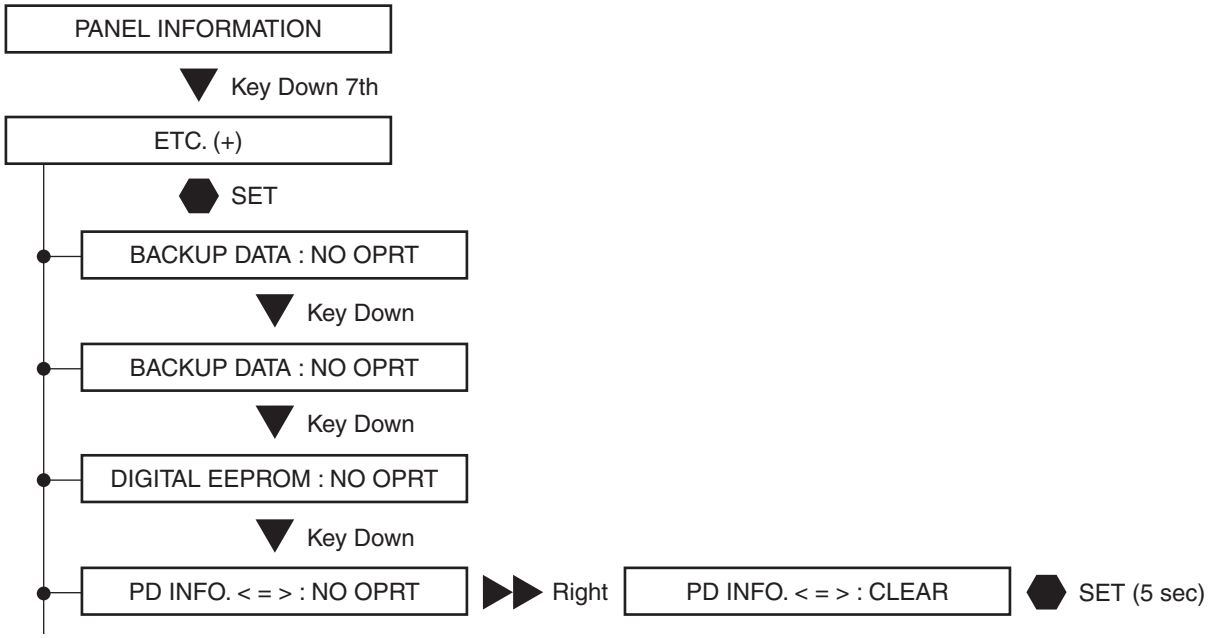
Item	Content	Clearing at the Replacement			Clearing method	
		Panel	POWER SUPPLY Unit	Other parts	Factory Menu (ETC layer)	RS-232C Commands
Hour-meter	Accumulated power-on time	Must be cleared	No need to be cleared	No need to be cleared	HR-MTR INFO.	CHM
Pulse-meter	Accumulated number of pulses emitted	Must be cleared (mandatory)	No need to be cleared	No need to be cleared	PM/B1-B5	CPM
Shutdown history of the panel	Causes and hour-meter values for the last eight shutdowns (SD) of the Panel	Must be cleared	No need to be cleared	No need to be cleared	SD INFO.	CSD
Power-down history	Causes and hour-meter values for the last eight power-downs (PDs) of the Panel	Must be cleared	No need to be cleared	No need to be cleared	PD INFO.	CPD
Power-on counter	Relay-on count	No need to be cleared	Must be cleared (mandatory)	No need to be cleared	P COUNT INFO.	CPC
MAX TEMP	Historical max. temperature of the panel	Must be cleared	Must be cleared	Must be cleared	MAX TEMP.	CMT

Notes:
- As the pulse-meter count is used for each correction function, the log must be cleared when the panel is replaced.
- After you clear the log, the unit must be turned off then back on again to reflect the cleared data for each correction function. If any adjustment is required after clearing the log, be sure to turn the unit off then back on again before adjustment.

(1) Clearance of logs, using the Factory menu

① Turn on the power.
② Enter the Panel Factory mode.
③ Clear the various logs, as shown in the figure below.

Note: The following example shows how to clear the PD log (PD INFO.). To clear other items, select each item you wish to clear then perform the same procedures.



④ Turn off the power.

(2) Using the RS-232C commands

① Turn on the power.
② Issue the FAY command.
③ Issue the Delete command for a log you wish to clear.
④ Turn off the power.

8.4 ADJUSTMENT WHEN THE SERVICE PANEL ASSY IS REPLACED

After the panel is replaced with one for service, voltage margin adjustment is required.

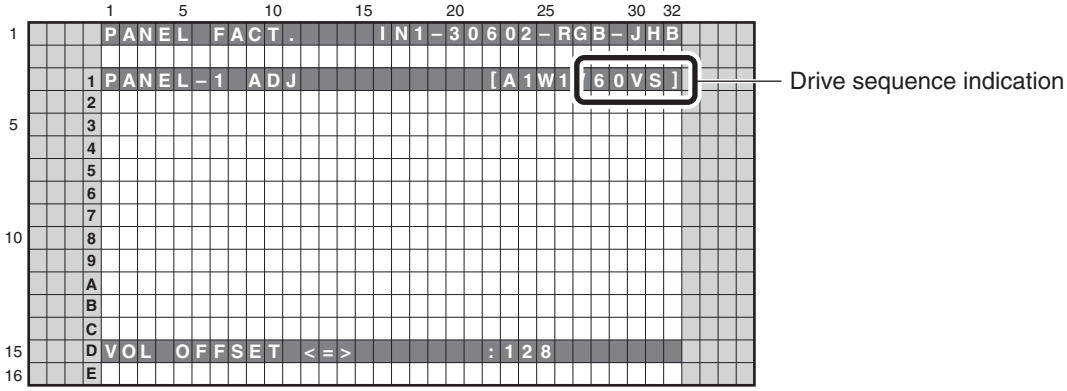
[Preparation]

Basically, voltage margin adjustment is performed using the Panel Factory menu.
After the panel is replaced and the unit is turned on, clear the pulse meter first.
For details on how to clear the pulse meter, see "8.3 HOW TO CLEAR HISTORY DATA".

∗1: As various corrections are made referring to the pulse-meter count to calculate how long the panel has been used, if adjustment of the panel for service is performed without clearing the pulse-meter count, proper adjustments will not be performed.

∗2: The drive sequence for Video 60-Hz is used for adjustment. When adjustment is made using the Panel Factory menu, the current drive sequence is displayed on the screen, as shown in the figure below. Make sure that 60VS is always indicated during adjustment.

∗3: Select the input fuction excepting PC.

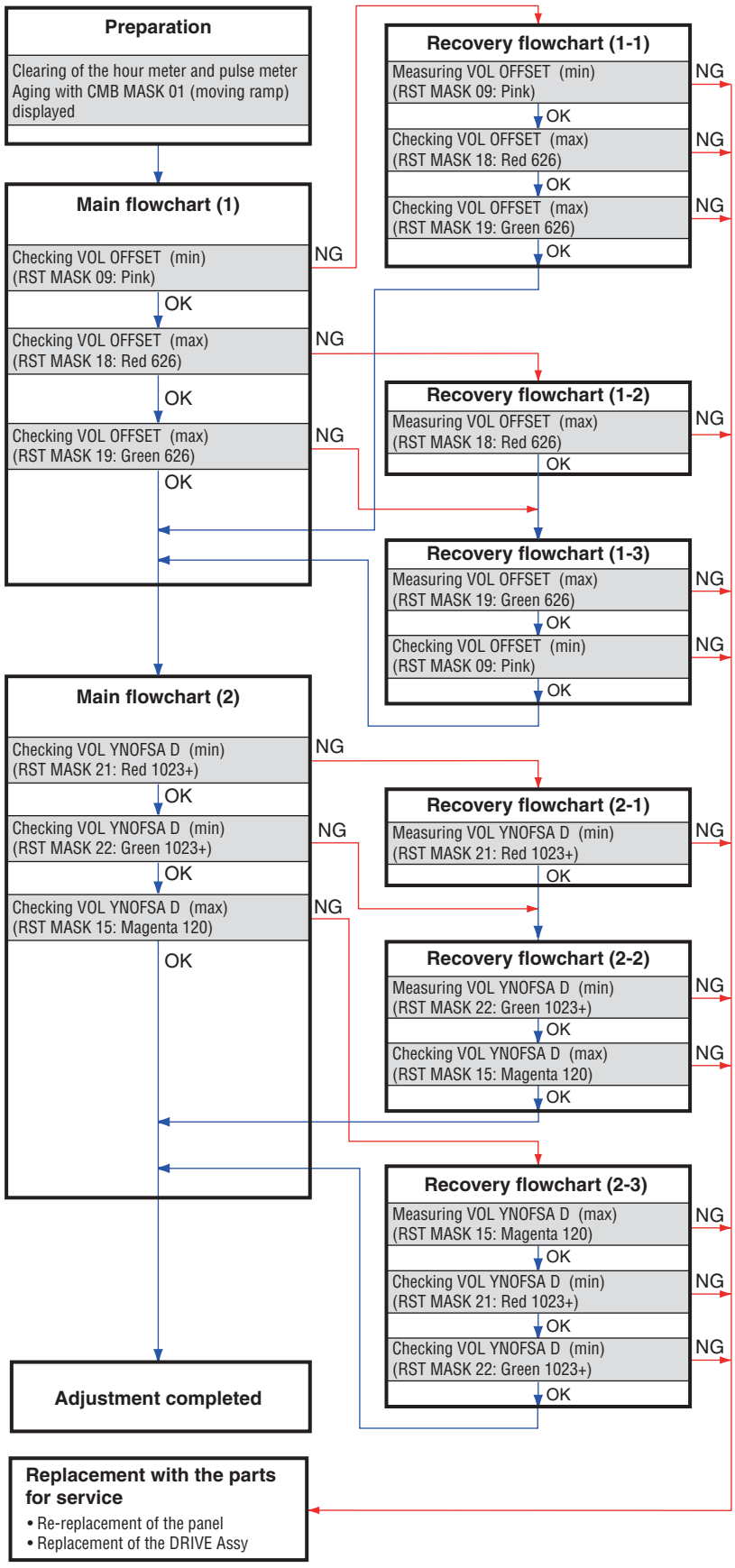


Example of the On-Screen display during Panel Factory mode

[Supplement]

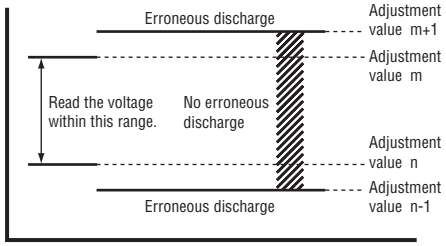
In the "PANEL-1ADJ" layer, the Panel White Balance value is reset to default, Panel Gamma is set to Straight, Noise is set to OFF, LUT mode is set to ON and Reset active control is set to OFF.
If adjustment is performed using RS232C commands, unlike the case of Factory menu operation, adjustments are not interlocked. Therefore, settings must be performed individually, by issuing commands. (See the section on preparations before adjustment.)

Overview



Range of margin measuring

Read the voltage within the hysteresis (stricter value).



Definition of limits for the voltage margins (abnormal lit/dead cells)

Abnormal lit cells:

- Five or fewer abnormal cells on the whole screen
- Two or fewer abnormal cells within a radius of 1 cm

Abnormal dead cells

- Fifteen or fewer abnormal cells on the whole screen
- Two or fewer abnormal cells within a radius of 1 cm

*: Abnormal cells visually recognizable at a distance of 1 meter from the panel must be counted.
*: Cells displayed abnormally for less than one second are not counted as abnormal cells.

Definition of tones for the measuring signals

FHD signal (1920*1080)/Video 60-Hz sequence /Dither: ON, L dither: ON, noise: OFF

Pink	RST MASK 09 (R 1023 /G 626 /B 1023)
Magenta 120	RST MASK 15 (R 120 /G 0 /B 120)
Red 626	RST MASK 18 (R 626 /G 0 /B 0)
Green 626	RST MASK 19 (R 0 /G 626 /B 0)
Blue 626	RST MASK 20 (R 0 /G 0 /B 626)
Red 1023+	RST MASK 21 (R 1023 /G 120 /B 120)
Green 1023+	RST MASK 22 (R 120 /G 1023 /B 120)
Blue 1023+	RST MASK 23 (R 120 /G 120 /B 1023)

Interlocked settings for Voltages Vyknofs1/3/4

For the 9th-generation PDPs, interlocked setting for Voltages Vyknofs1/3/4 is available on the Factory menu or with RS232C commands, for easier adjustment. Therefore, in the adjustment flowchart, the interlocked setting function is used. (Individual setting for each adjustment value is also possible, as in the conventional setting methods.

Set Voltage	Factory Menu	Command
Vyknofs1 individual	VOL YNOFS1 D	[V1F]
Vyknofs3 individual	VOL YNOFS3 D	[V3F]
Vyknofs4 individual	VOL YNOFS4 D	[V4F]
Vyknofs1,3,4 interlocked	VOL YNOFSA D	[VYF]

Note:

- The initial value for the interlocked setting value is 128, including for factory preset values.
- See "[3] DRIVE ASSY" of "5.2 DIAGNOSIS FLOWCHART OF FAILURE ANALYSIS" for calculation of actually used voltage values.

Preparation before adjustment

[Replacement with the panel for service is completed.]

Procedures for resetting corrections for change over time

- Turn the unit on. / [PON]
- Enter Factory mode. / [FAY]
- Set PM/B1-B5 to CLEAR (to clear the pulse meter). / [CPM]
- Set HR-MTR to CLEAR (to clear the hour meter). / [CHM]
- Turn the unit off. / [POF]

∗ To reflect the results of log clearing for each correction function, the unit must be turned off then back on again. Before adjustment, be sure to turn the unit off then back on again.

Procedures for stabilizing the panel before adjustment

- Turn the unit on. / [PON]
- Enter Factory mode. / [FAY]
- Enter the tentative setting value of the replacement panel

Setting Item	Tentative Setting Value
VOL SUS / [VSU ***]	128
VOL OFFSET / [VOF ***]	VOF indication value
VOL RST P / [VRP ***]	VRP indication value
VOL XPOFS1 / [VX1 ***]	085
VOL XPOFS2 / [VX2 ***]	063
VOL YNOFS1 D / [V1F ***]	V1F indication value
VOL YNOFS3 D / [V3F ***]	V3F indication value +0
VOL YNOFS4 D / [V4F ***]	V4F indication value
VOL YNOFSA D / [VYF ***]	128

Note: "+0" shows α.

- Display CMB MASK 01 (moving ramp). / [MKC S01]
- Select Video 60-Hz sequence. / [VFQ S03]
- Perform aging for 30 minutes.

Indication example of the adjustment label of service panel

AWU1359 Data VOF=113
VRP=018 V1F=138 V3F=128+α
V4F=149 Hour Meter_ _ _ _ _ _ _ _ _ _ H
Data 08/02/28 Chassis CXX99999
Time 18:27 Pnl FD4A0808100123

Note: The symbol "α" denotes the adjustment value plus 0.

∗ Each setting value described on the adjustment label denotes an indicated data value but not a real voltage value. Therefore, just enter the data value as a setting value.

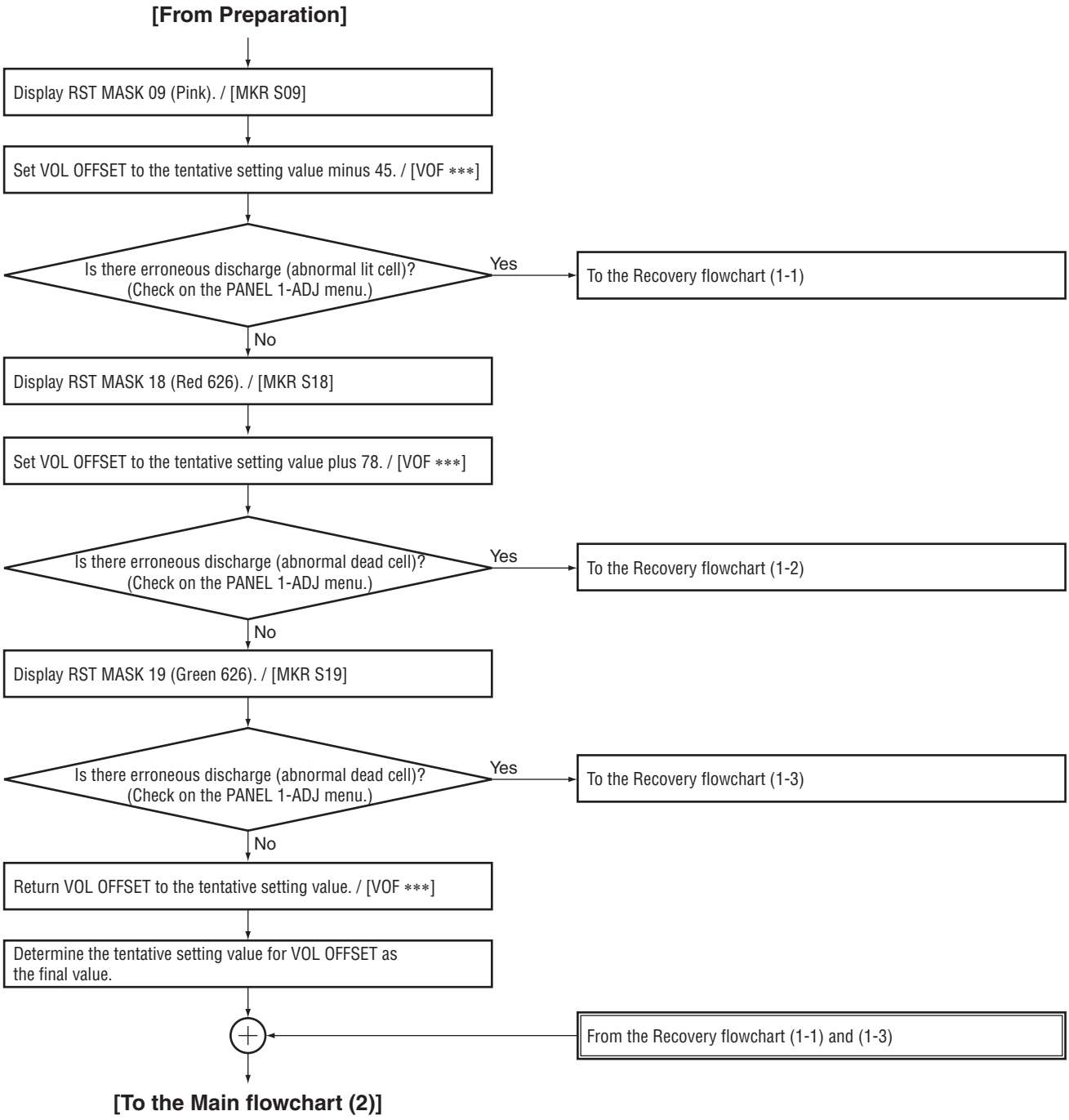
∗ To store the VFQ S03 command in memory, transmit it after displaying the mask.

[To the Main flowchart (1)]

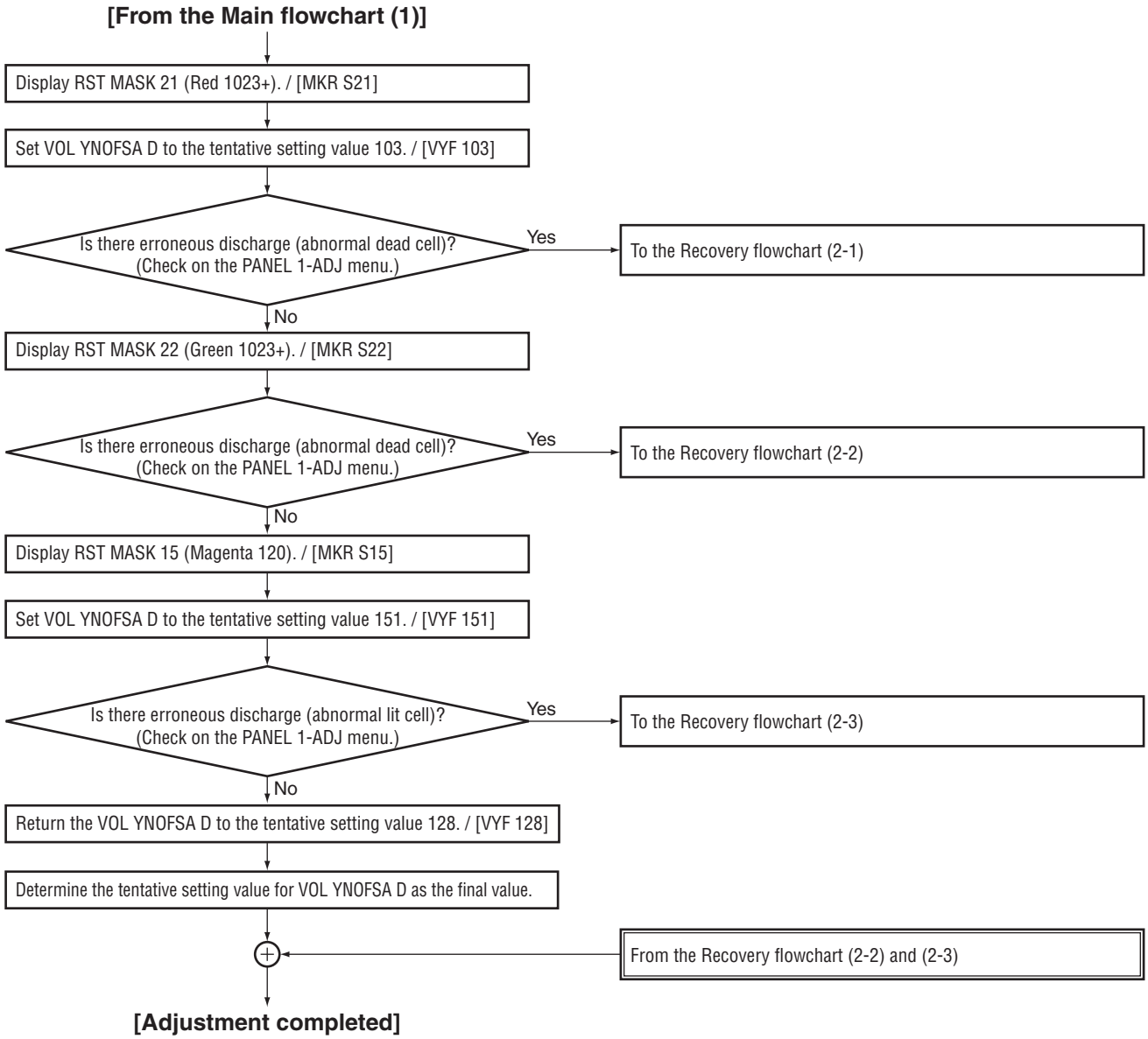
Note:
* When you perform the adjustment with RS232C commands, issue the following commands in addition.
* If the unit is shut down in the middle of performing the adjustment flowchart, reissuing of the command is required.

[PAV S00] : To set panel drive mode to Factory
[VFQ S03] : To set Drive Sequence to Video 60-Hz
[SQM S01] : To set Drive Sequence to Video
[WBI S01] : To temporarily reset the Panel WB adjustment value to default (WBI S00 cancels this setting.)
[PGR S00] : To set the gamma R value to that for Factory mode
[PGG S00] : To set the gamma G value to that for Factory mode
[PGB S00] : To set the gamma B value to that for Factory mode
[DIZ S03] : Dither ON, L dither ON, noise OFF.
[$1800000001] : LUT mode ON

Main flowchart (1)...Checking VOL OFFSET


[From Preparation]
Display RST MASK 09 (Pink). / [MKR S09]
Set VOL OFFSET to the tentative setting value minus 45. / [VOF ***]
Is there erroneous discharge (abnormal lit cell)? (Check on the PANEL 1-ADJ menu.)
Yes
To the Recovery flowchart (1-1)
No
Display RST MASK 18 (Red 626). / [MKR S18]
Set VOL OFFSET to the tentative setting value plus 78. / [VOF ***]
Is there erroneous discharge (abnormal dead cell)? (Check on the PANEL 1-ADJ menu.)
Yes
To the Recovery flowchart (1-2)
No
Display RST MASK 19 (Green 626). / [MKR S19]
Is there erroneous discharge (abnormal dead cell)? (Check on the PANEL 1-ADJ menu.)
Yes
To the Recovery flowchart (1-3)
No
Return VOL OFFSET to the tentative setting value. / [VOF ***]
Determine the tentative setting value for VOL OFFSET as the final value.
From the Recovery flowchart (1-1) and (1-3)
[To the Main flowchart (2)]

Main flowchart (2)...Checking VOL YNOFSA D

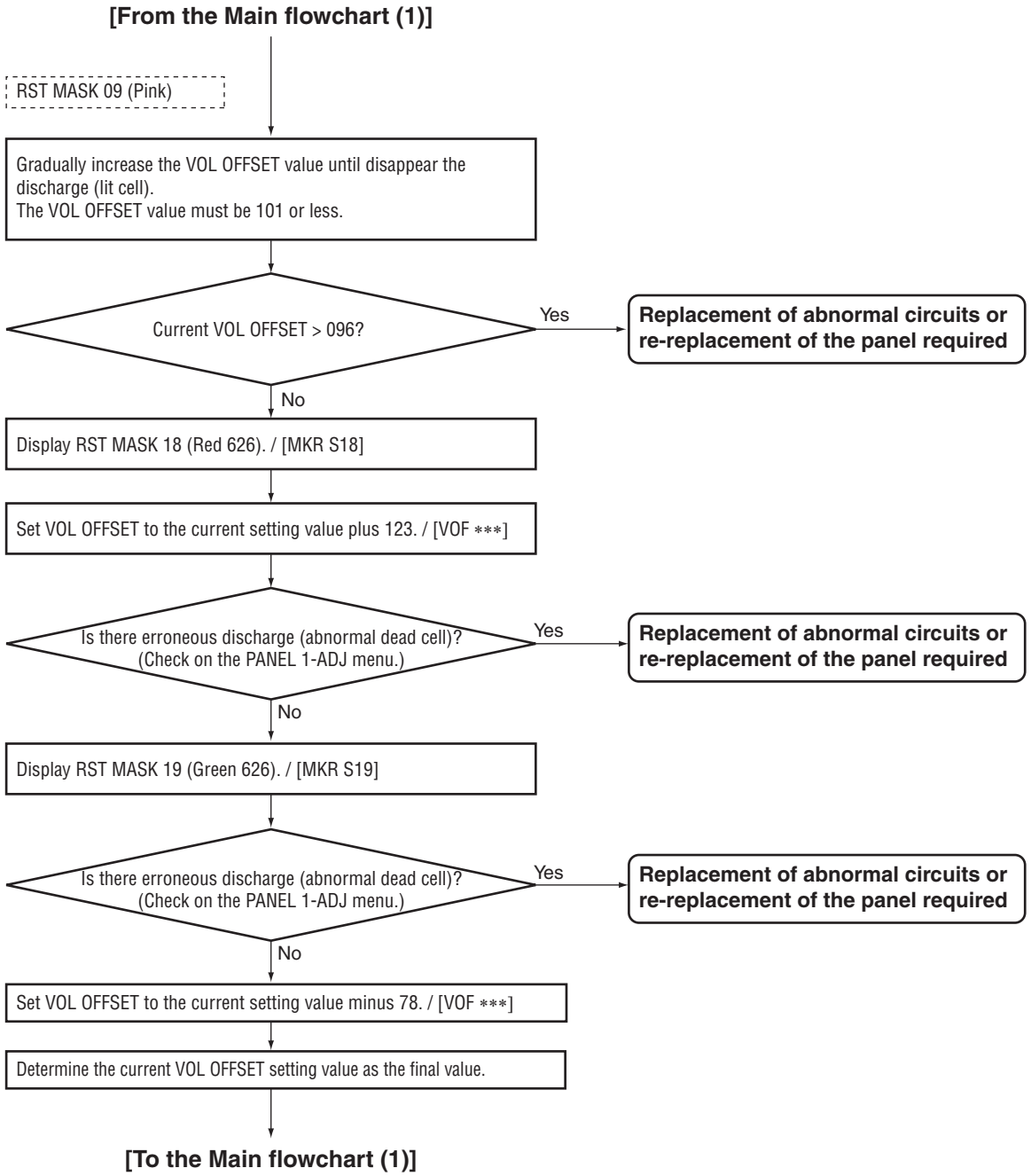

[From the Main flowchart (1)]
Display RST MASK 21 (Red 1023+). / [MKR S21]
Set VOL YNOFSA D to the tentative setting value 103. / [VYF 103]
Is there erroneous discharge (abnormal dead cell)? (Check on the PANEL 1-ADJ menu.)
Yes
To the Recovery flowchart (2-1)
No
Display RST MASK 22 (Green 1023+). / [MKR S22]
Is there erroneous discharge (abnormal dead cell)? (Check on the PANEL 1-ADJ menu.)
Yes
To the Recovery flowchart (2-2)
No
Display RST MASK 15 (Magenta 120). / [MKR S15]
Set VOL YNOFSA D to the tentative setting value 151. / [VYF 151]
Is there erroneous discharge (abnormal lit cell)? (Check on the PANEL 1-ADJ menu.)
Yes
To the Recovery flowchart (2-3)
No
Return the VOL YNOFSA D to the tentative setting value 128. / [VYF 128]
Determine the tentative setting value for VOL YNOFSA D as the final value.
From the Recovery flowchart (2-2) and (2-3)
[Adjustment completed]

Note:
Make sure that the following values become the final setting values.

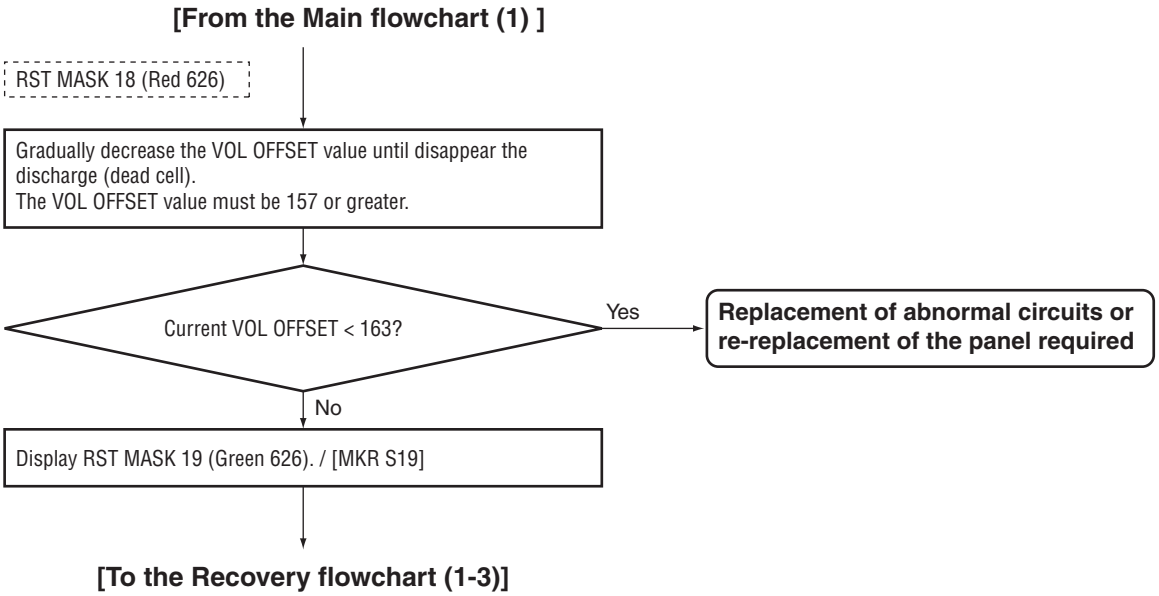
VOL SUS *1	VOL XPOSF2 *1
VOL OFFSET	VOL YNOFS1 D *1
VOL RST P *1	VOL YNOFS3 D *1
VOL XPOFS1 *1	VOL YNOFS4 D *1
	VOL YNOFS4 A

*1: The tentative setting value becomes the final value.

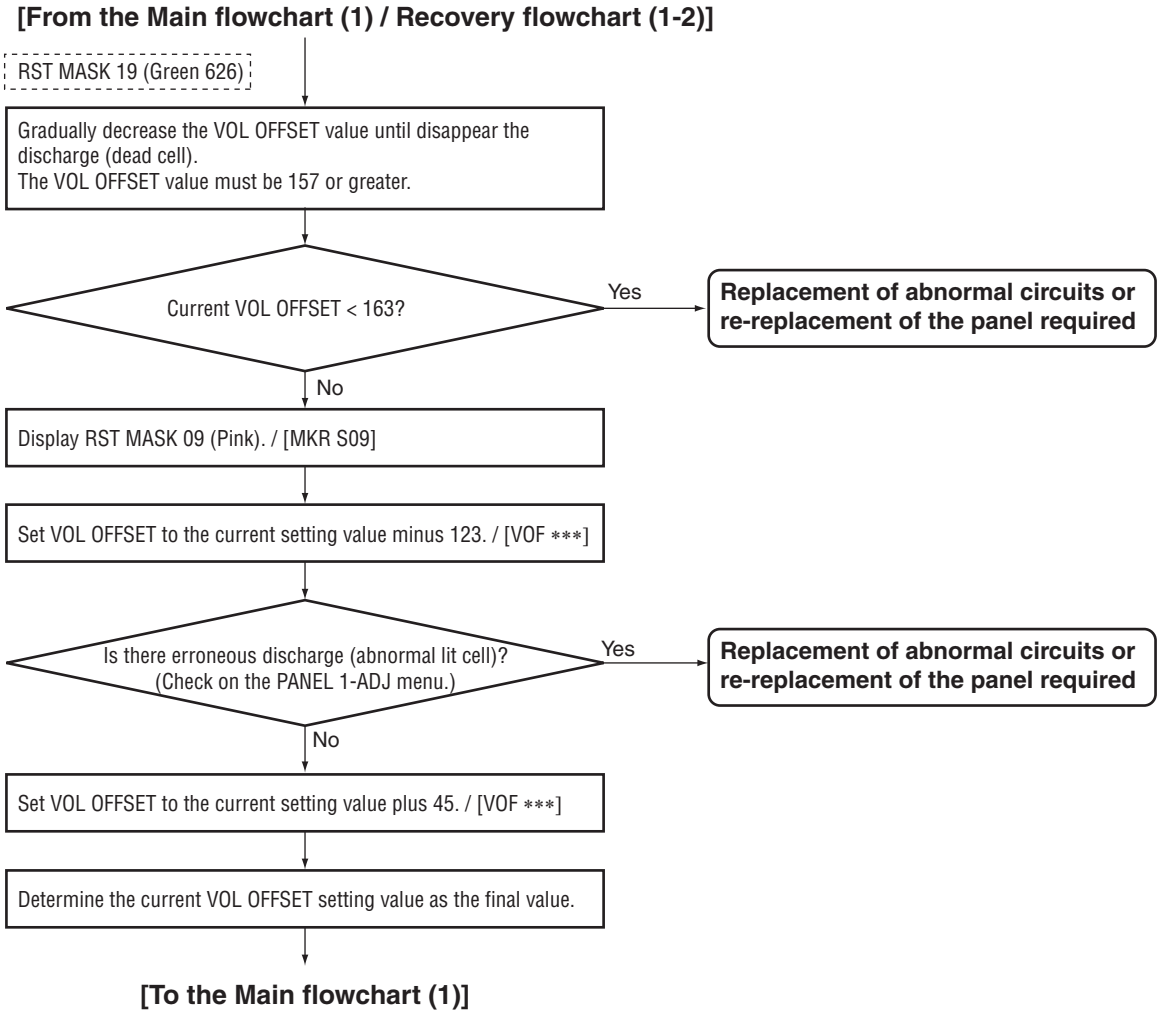
Recovery flowchart (1-1)...Changing the VOL OFFSET setting


[From the Main flowchart (1)]
RST MASK 09 (Pink)
Gradually increase the VOL OFFSET value until disappear the discharge (lit cell).
The VOL OFFSET value must be 101 or less.
Current VOL OFFSET > 096?
Yes
Replacement of abnormal circuits or re-replacement of the panel required
No
Display RST MASK 18 (Red 626). / [MKR S18]
Set VOL OFFSET to the current setting value plus 123. / [VOF ***]
Is there erroneous discharge (abnormal dead cell)? (Check on the PANEL 1-ADJ menu.)
Yes
Replacement of abnormal circuits or re-replacement of the panel required
No
Display RST MASK 19 (Green 626). / [MKR S19]
Is there erroneous discharge (abnormal dead cell)? (Check on the PANEL 1-ADJ menu.)
Yes
Replacement of abnormal circuits or re-replacement of the panel required
No
Set VOL OFFSET to the current setting value minus 78. / [VOF ***]
Determine the current VOL OFFSET setting value as the final value.
[To the Main flowchart (1)]

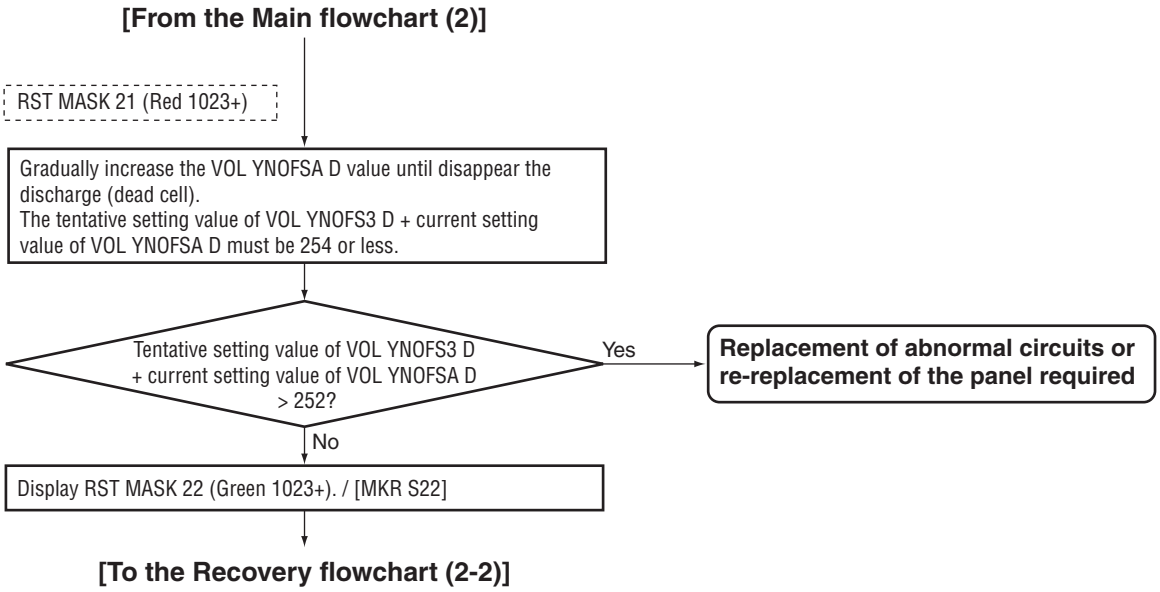
Recovery flowchart (1-2)...Changing the VOL OFFSET setting


[From the Main flowchart (1)]
RST MASK 18 (Red 626)
Gradually decrease the VOL OFFSET value until disappear the discharge (dead cell).
The VOL OFFSET value must be 157 or greater.
Current VOL OFFSET < 163?
Yes
Replacement of abnormal circuits or re-replacement of the panel required
No
Display RST MASK 19 (Green 626). / [MKR S19]
[To the Recovery flowchart (1-3)]

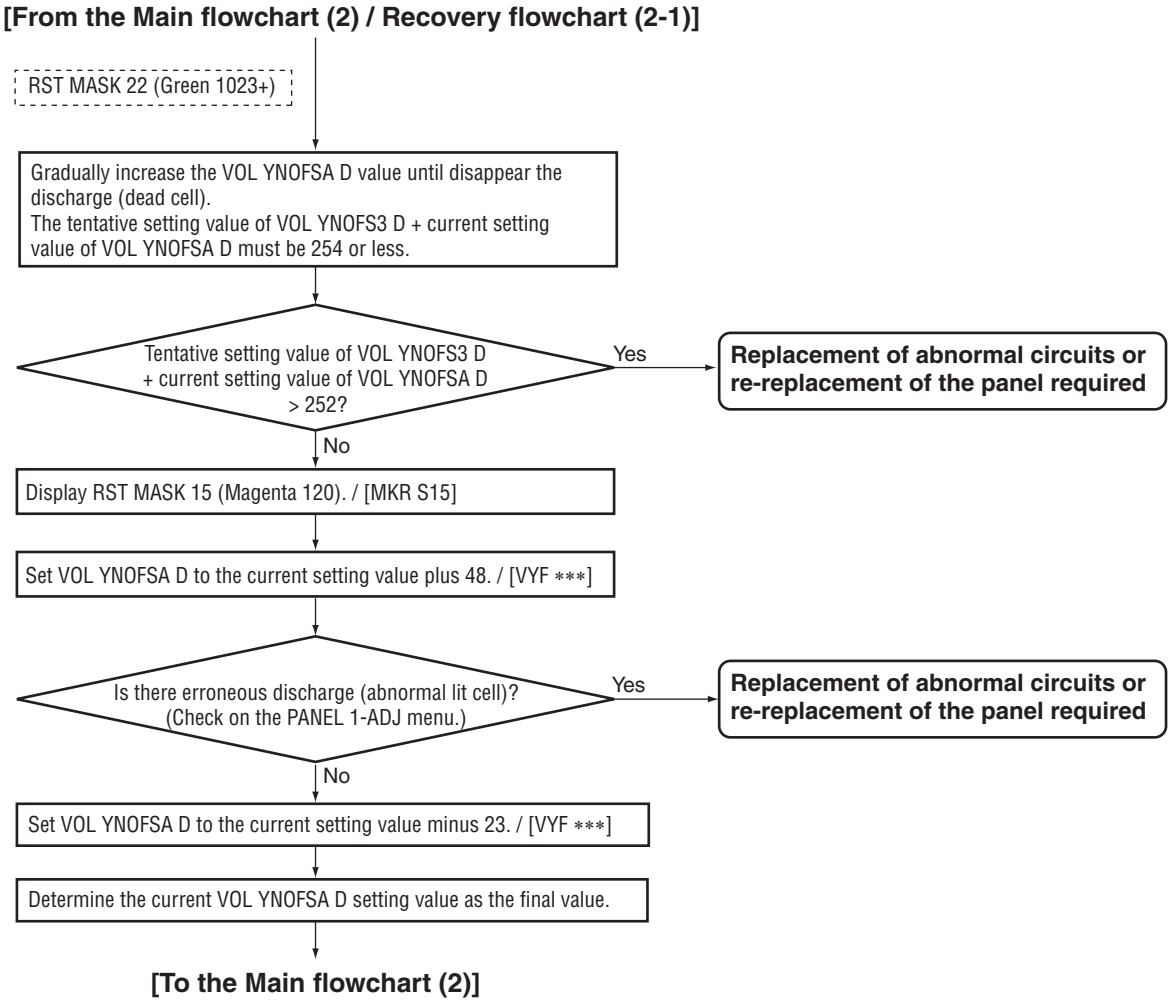
Recovery flowchart (1-3)...Changing the VOL OFFSET setting


[From the Main flowchart (1) / Recovery flowchart (1-2)]
RST MASK 19 (Green 626)
Gradually decrease the VOL OFFSET value until disappear the discharge (dead cell).
The VOL OFFSET value must be 157 or greater.
Current VOL OFFSET < 163?
Yes
Replacement of abnormal circuits or re-replacement of the panel required
No
Display RST MASK 09 (Pink). / [MKR S09]
Set VOL OFFSET to the current setting value minus 123. / [VOF ***]
Is there erroneous discharge (abnormal lit cell)? (Check on the PANEL 1-ADJ menu.)
Yes
Replacement of abnormal circuits or re-replacement of the panel required
No
Set VOL OFFSET to the current setting value plus 45. / [VOF ***]
Determine the current VOL OFFSET setting value as the final value.
[To the Main flowchart (1)]

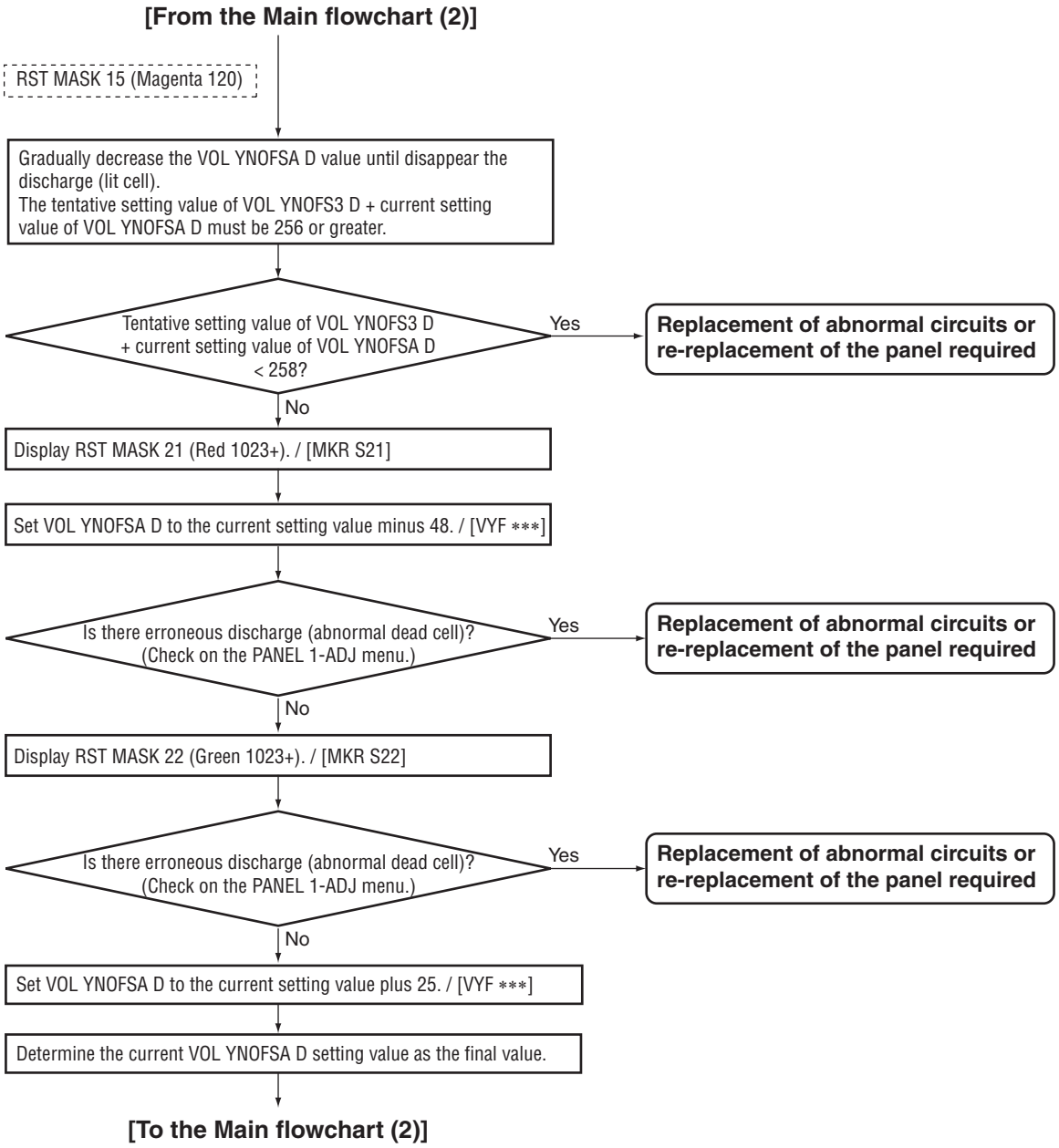
Recovery flowchart (2-1)...Changing the VOL YNOFSA D setting


[From the Main flowchart (2)]
RST MASK 21 (Red 1023+)
Gradually increase the VOL YNOFSA D value until disappear the discharge (dead cell).
The tentative setting value of VOL YNOFS3 D + current setting value of VOL YNOFSA D must be 254 or less.
Tentative setting value of VOL YNOFS3 D + current setting value of VOL YNOFSA D > 252?
Yes
Replacement of abnormal circuits or re-replacement of the panel required
No
Display RST MASK 22 (Green 1023+). / [MKR S22]
[To the Recovery flowchart (2-2)]

Recovery flowchart (2-2)...Changing the VOL YNOFSA D setting


[From the Main flowchart (2) / Recovery flowchart (2-1)]
RST MASK 22 (Green 1023+)
Gradually increase the VOL YNOFSA D value until disappear the discharge (dead cell).
The tentative setting value of VOL YNOFS3 D + current setting value of VOL YNOFSA D must be 254 or less.
Tentative setting value of VOL YNOFS3 D + current setting value of VOL YNOFSA D > 252?
Yes
Replacement of abnormal circuits or re-replacement of the panel required
No
Display RST MASK 15 (Magenta 120). / [MKR S15]
Set VOL YNOFSA D to the current setting value plus 48. / [VYF ***]
Is there erroneous discharge (abnormal lit cell)? (Check on the PANEL 1-ADJ menu.)
Yes
Replacement of abnormal circuits or re-replacement of the panel required
No
Set VOL YNOFSA D to the current setting value minus 23. / [VYF ***]
Determine the current VOL YNOFSA D setting value as the final value.
[To the Main flowchart (2)]

Recovery flowchart (2-3)...Changing the VOL YNOFSA D setting


[From the Main flowchart (2)]
RST MASK 15 (Magenta 120)
Gradually decrease the VOL YNOFSA D value until disappear the discharge (lit cell).
The tentative setting value of VOL YNOFS3 D + current setting value of VOL YNOFSA D must be 256 or greater.
Tentative setting value of VOL YNOFS3 D + current setting value of VOL YNOFSA D < 258?
Yes
Replacement of abnormal circuits or re-replacement of the panel required
No
Display RST MASK 21 (Red 1023+). / [MKR S21]
Set VOL YNOFSA D to the current setting value minus 48. / [VYF ***]
Is there erroneous discharge (abnormal dead cell)? (Check on the PANEL 1-ADJ menu.)
Yes
Replacement of abnormal circuits or re-replacement of the panel required
No
Display RST MASK 22 (Green 1023+). / [MKR S22]
Is there erroneous discharge (abnormal dead cell)? (Check on the PANEL 1-ADJ menu.)
Yes
Replacement of abnormal circuits or re-replacement of the panel required
No
Set VOL YNOFSA D to the current setting value plus 25. / [VYF ***]
Determine the current VOL YNOFSA D setting value as the final value.
[To the Main flowchart (2)]

8.5 ADJUSTMENT WHEN THE DRIVE ASSYS ARE REPLACED

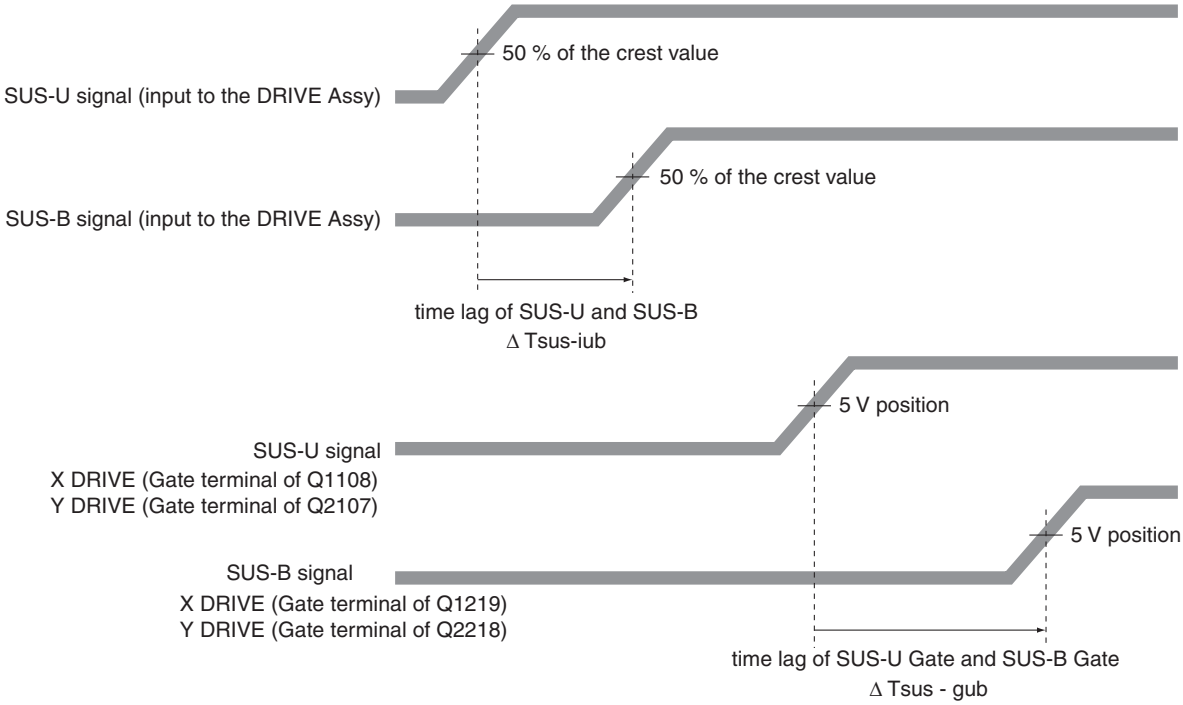
■ Waveform adjustments required when replacing the following parts of the X DRIVE and Y DRIVE Assys.

Assy Name	Ref No.	Part Name	Part Category	Remarks
X DRIVE Assy	IC1101	PS9818-1(P)	Photo Coupler	
	IC1104	TND307TD	FET Driver	
	IC1204	PS9818-2(P)	Photo Coupler	
	IC1209	TND307TD	FET Driver	
Y DRIVE Assy	IC2101	PS9818-1(P)	Photo Coupler	
	IC2103	TND307TD	FET Driver	
	IC2201	PS9818-1(P)	Photo Coupler	
	IC2203	TND307TD	FET Driver	

■ TIME LAG ADJUSTMENT OF THE CONTROL SIGNAL (SUS-B)

① Measure the time lag for the SUS-U signal to the SUS-B signal.
② Check the time lag for the SUS-B Gate signal to the SUS-U Gate siganl.
Adjust the variable control so that the time lag of Gate becomes " time lag of input signal + $\alpha \pm 5$ nsec."

Note: • Be sure to set the Drive to OFF for adjustment.
• For details on measuring points of waveform, see the figure below.


50 % of the crest value
SUS-U signal (input to the DRIVE Assy)
50 % of the crest value
SUS-B signal (input to the DRIVE Assy)
time lag of SUS-U and SUS-B
Δ Tsus-iub
5 V position
SUS-U signal
X DRIVE (Gate terminal of Q1108)
Y DRIVE (Gate terminal of Q2107)
5 V position
SUS-B signal
X DRIVE (Gate terminal of Q1219)
Y DRIVE (Gate terminal of Q2218)
time lag of SUS-U Gate and SUS-B Gate
Δ Tsus - gub

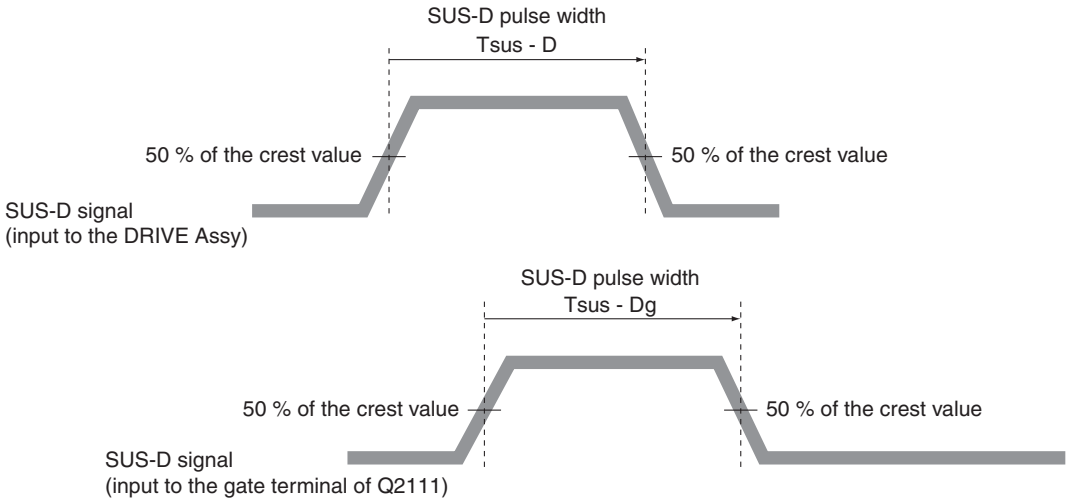
Time lag of SUS-U Gate and SUS-B Gate : Δ Tsus - gub
Adjust so that "Δ Tsus - gub = Δ Tsus - iub + $\alpha \pm 5$ nsec," using the variable controls shown in the table below:

Assy	VR	Value of α
X DRIVE Assy	VR1002	60 nsec
Y DRIVE Assy	VR2002	60 nsec

DELAY ADJUSTMENT OF THE CONTROL SIGNAL (SUS-D)

① Measure the pulse width of the SUS-D signal.
② Check the pulse width of the SUS-D input signal (gate terminal of Q2111).
Adjust the variable control so that the pulse width of the SUS-D input signal (gate terminal of Q2111) becomes the same pulse width ± 5 nsec as the SUS-D signal.

Note: • For details on measuring points of waveform, see the figure below.

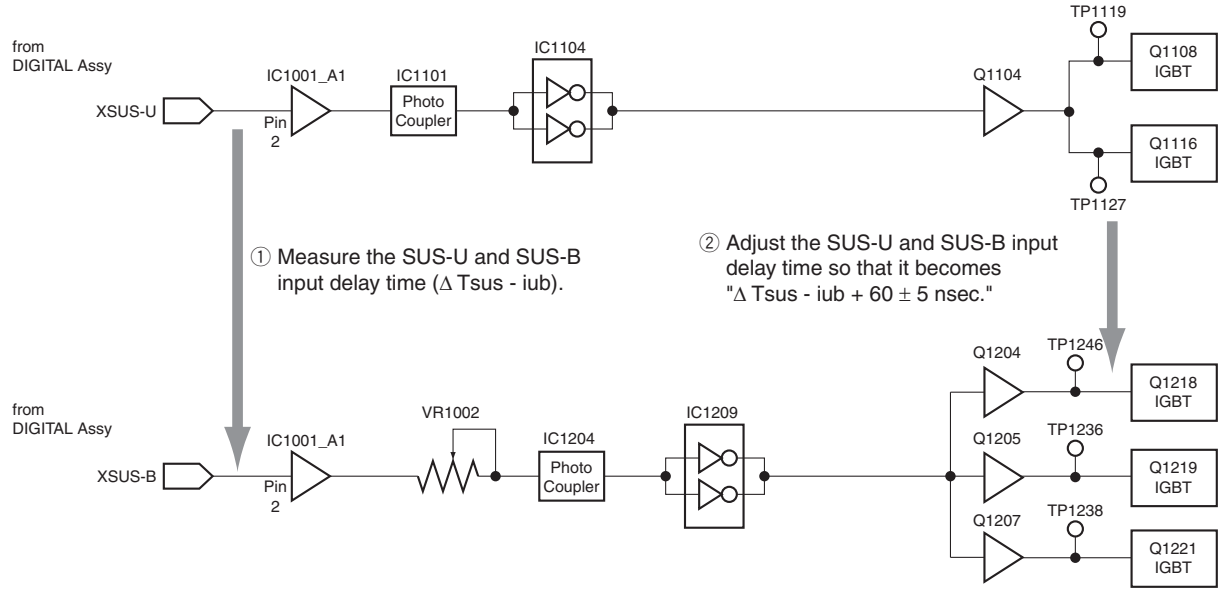

SUS-D pulse width
Tsus - D
50 % of the crest value
50 % of the crest value
SUS-D signal
(input to the DRIVE Assy)
SUS-D pulse width
Tsus - Dg
50 % of the crest value
50 % of the crest value
SUS-D signal
(input to the gate terminal of Q2111)

SUS-D pulse width: Tsus - Dg
Adjust so that "Tsus - Dg = Tsus - D ± 5 nsec," using the variable control shown in the table below:

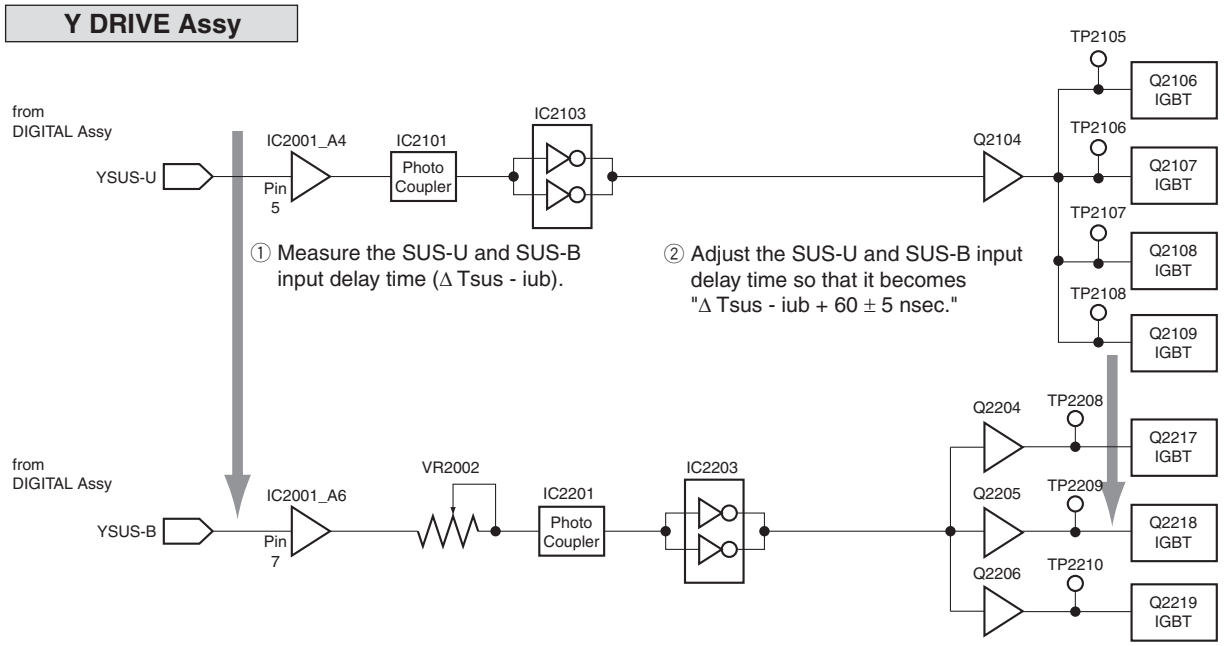
Assy	VR
Y DRIVE Assy	VR2001

■ SUS-B ADJUSTMENT

X DRIVE Assy

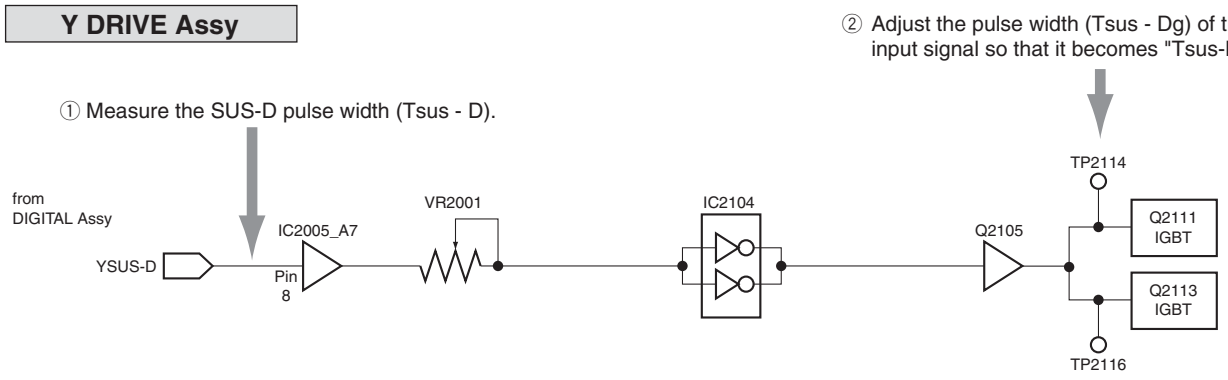


Y DRIVE Assy



■ SUS-D ADJUSTMENT

Y DRIVE Assy



A

B

C

D

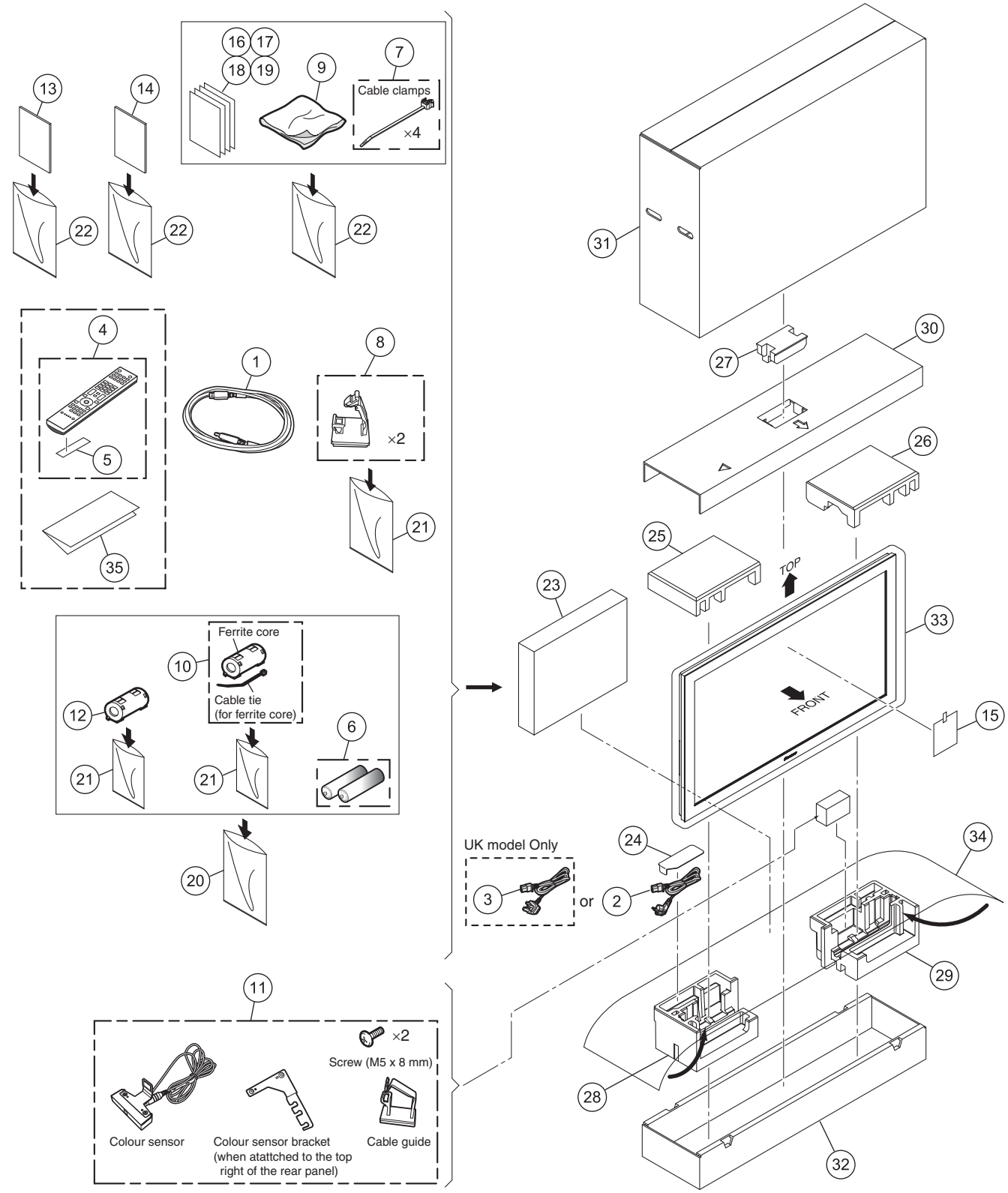
E

F

9. EXPLODED VIEWS AND PARTS LIST

NOTES:
- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Screws adjacent to ▼ mark on product are used for disassembly.*
- *For the applying amount of lubricants or glue, follow the instructions in this manual. (In the case of no amount instructions, apply as you think it appropriate.)*

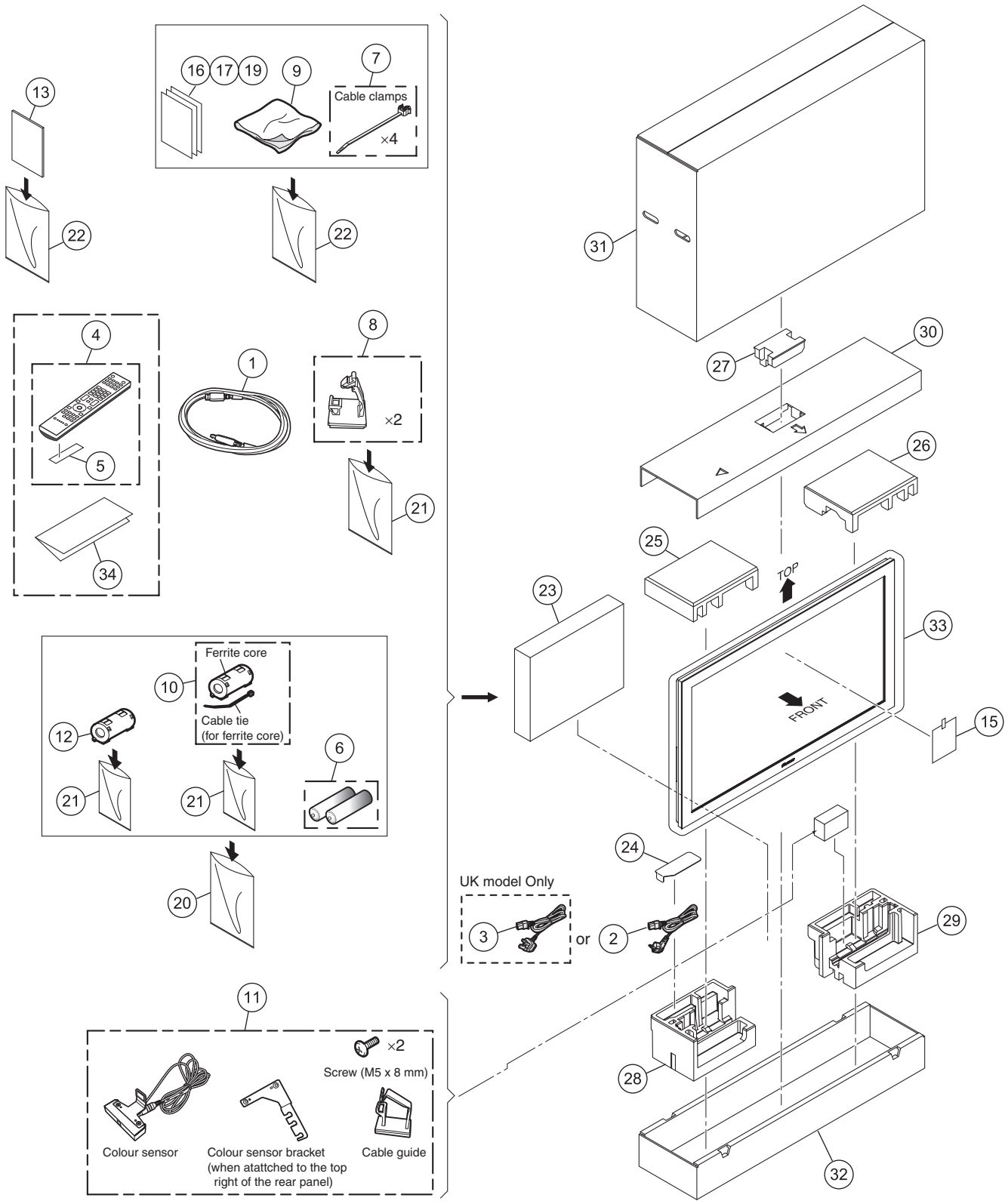
9.1 PACKING SECTION (KRP-500P/WYSIXK5)



PACKING SECTION PARTS LIST (KRP-500P/WYSIXK5)

Mark	No.	Description	Part No.
⚠	1	System Cable (2.9 m)	ADF1041
⚠	2	Power Cable	ADG1214
⚠	3	Power Cable	ADG1223
	4	Remote Control Unit	AXD1562
	5	Battery Cover (Black)	AZN2784
NSP	6	Alkaline Dry Cell Battery (LR6, AA)	VEM1045
	7	Binder Assy	AEC2158
	8	Cable Guide	AEC2167
	9	Cleaning Cloth	AED1285
⚠	10	Ferrite Core (L5313)	ATX1039
	11	Color Sensor Module	AXF1196
	12	Ferrite Core (L5320)	CTX1089
	13	Operating Instructions (Italian / Dutch / Spanish / Russian)	ARC1609
	14	Operating Instructions (English / French / German)	ARE1494
	15	Caution Card	ARM1310
	16	Cleaning Caution PTK	ARM1311
	17	Ferrite Core Info.	ARM1396
	18	Block Diagram (500P)	ARY1216
NSP	19	Warranty Card EU	ARY7129
NSP	20	Vinyl Pouch	AHG-195
	21	Vinyl Bag	AHG1337
NSP	22	Vinyl Bag	AHG1340
	23	Accessory Box	AHC1122
	24	Power Cord Lid (50M E)	AHC1127
	25	Pad (5095E T-L)	AHA2767
	26	Pad (5095E T-R)	AHA2768
	27	Pad (5095E T-C)	AHA2769
	28	Pad (5095E B-L)	AHA2770
	29	Pad (5095E B-R)	AHA2771
	30	Carton Board (50M EU)	AHB1317
	31	Upper Carton (50P EU)	AHD3733
	32	Under Carton (5090)	AHD3672
	33	Mirror Mat	AHG1284
	34	HD Sheet	AHG1416
NSP	35	Power Button Info.	ARM1428

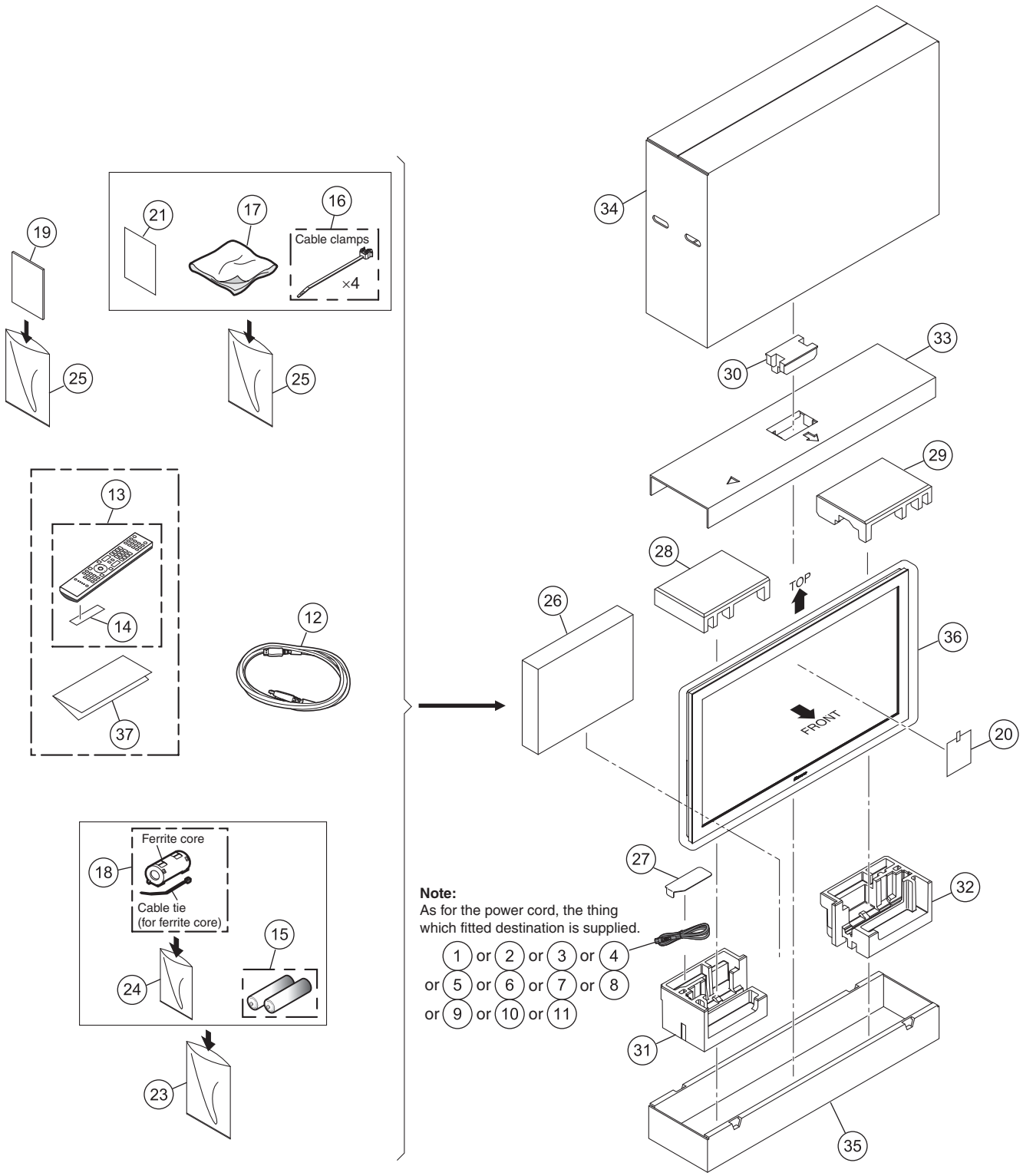
9.2 PACKING SECTION (KRP-500P/WYS5)



PACKING SECTION PARTS LIST (KRP-500P/WYS5)

Mark	No.	Description	Part No.
⚠	1	System Cable (2.9 m)	ADF1041
⚠	2	Power Cable	ADG1214
⚠	3	Power Cable	ADG1223
	4	Remote Control Unit	AXD1562
	5	Battery Cover (Black)	AZN2784
NSP	6	Alkaline Dry Cell Battery (LR6, AA)	VEM1045
	7	Binder Assy	AEC2158
	8	Cable Guide	AEC2167
	9	Cleaning Cloth	AED1285
⚠	10	Ferrite Core (L5313)	ATX1039
	11	Color Sensor Module	AXF1196
	12	Ferrite Core (L5320)	CTX1089
	13	Operating Instructions (Russian)	ARC1619
	14	•••••	
	15	Caution Card	ARM1232
	16	Cleaning Caution 11L	ARM1283
	17	Ferrite Core Info.	ARM1395
	18	•••••	
NSP	19	Warranty Card EU	ARY7127
NSP	20	Vinyl Pouch	AHG-195
	21	Vinyl Bag	AHG1337
NSP	22	Vinyl Bag	AHG1340
	23	Accessory Box	AHC1083
	24	Power Cord Lid (50M G)	AHC1128
	25	Pad (5095 T-L)	AHA2772
	26	Pad (5095 T-R)	AHA2773
	27	Pad (5095 T-C)	AHA2774
	28	Pad (5095 B-L)	AHA2775
	29	Pad (5095 B-R)	AHA2776
	30	Carton Board (50M JJ)	AHB1318
	31	Upper Carton (50P EUJ)	AHD3734
	32	Under Carton (5090)	AHD3673
	33	Mirror Mat	AHG1284
NSP	34	Power Button Info.	ARM1429

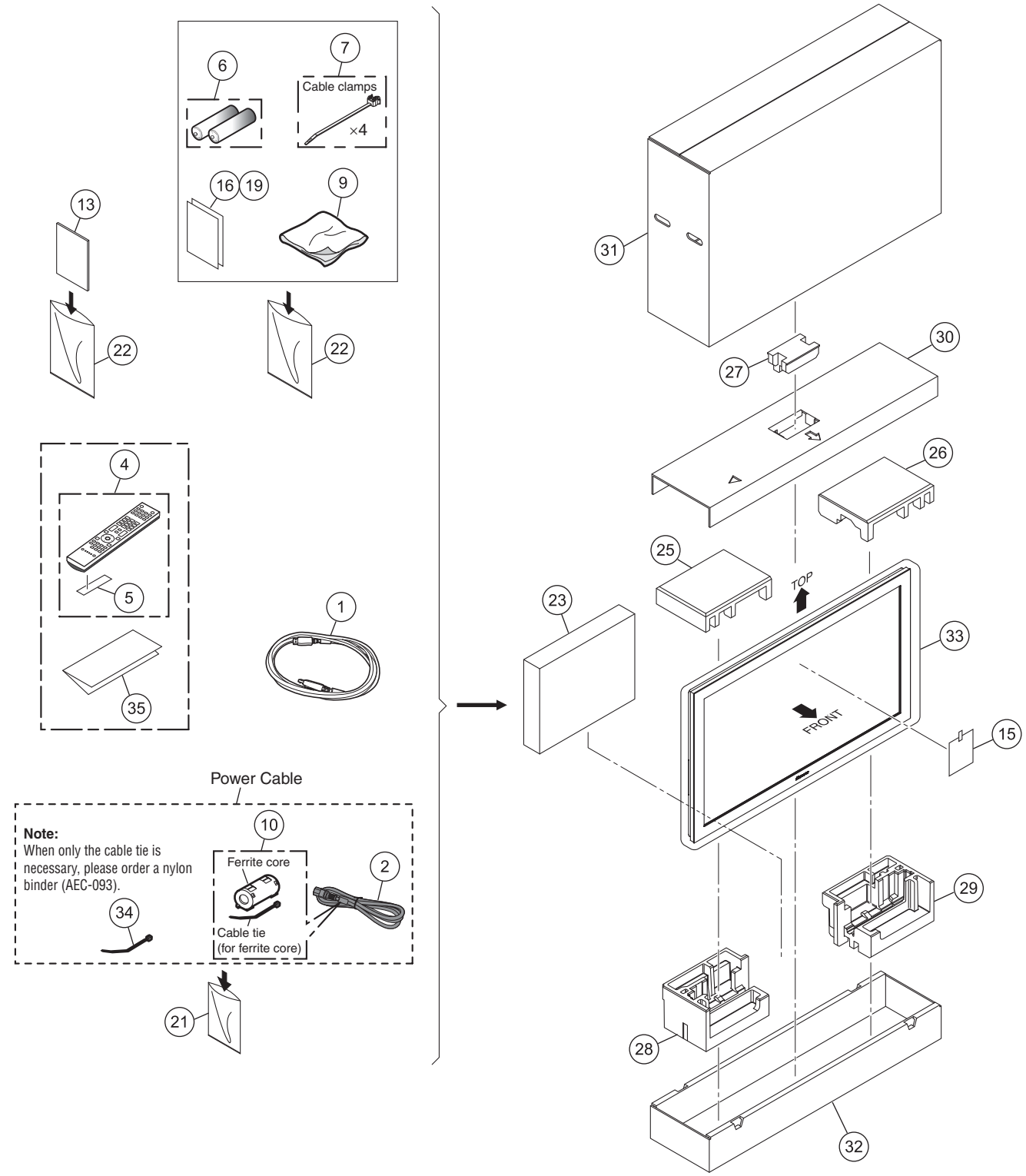
9.3 PACKING SECTION (KRP-500P/LFT)



PACKING SECTION PARTS LIST (KRP-500P/LFT)

Mark	No.	Description	Part No.
⚠ NSP	1	Power Cable	ADG1232
⚠ NSP	2	Power Cable	ADG1234
⚠ NSP	3	Power Cable	ADG1236
⚠ NSP	4	Power Cable	ADG1239
⚠ NSP	5	Power Cable	ADG1241
⚠ NSP	6	Power Cable	ADG1243
⚠ NSP	7	Power Cable	ADG1244
⚠ NSP	8	Power Cable	ADG1246
⚠ NSP	9	Power Cable	ADG1251
⚠ NSP	10	Power Cord Assy	AWX1095
⚠	11	Cord Set	AXY1194
⚠	12	System Cable (2.9 m)	ADF1041
	13	Remote Control Unit	AXD1567
	14	Battery Cover (Black)	AZN2784
NSP	15	Dry Cell Battery (R6, AA)	VEM1039
	16	Binder Assy	AEC2158
	17	Cleaning Cloth	AED1285
⚠	18	Ferrite Core (L5313)	ATX1039
	19	Operating Instructions (English / Spanish / Portuguese / Trad-Chinese)	ARE1495
	20	Caution Card	ARM1232
	21	Cleaning Caution 11L	ARM1283
	22	•••••	
NSP	23	Vinyl Pouch	AHG-195
	24	Vinyl Bag	AHG1337
NSP	25	Vinyl Bag	AHG1340
	26	Accessory Box	AHC1083
	27	Power Cord Lid (50M G)	AHC1128
	28	Pad (5095 T-L)	AHA2772
	29	Pad (5095 T-R)	AHA2773
	30	Pad (5095 T-C)	AHA2774
	31	Pad (5095 B-L)	AHA2775
	32	Pad (5095 B-R)	AHA2776
	33	Carton Board (50M JJ GE)	AHB1318
	34	Upper Carton (50P GJ)	AHD3735
	35	Under Carton (5090)	AHD3673
	36	Mirror Mat	AHG1284
NSP	37	Power Button Info.	ARM1430

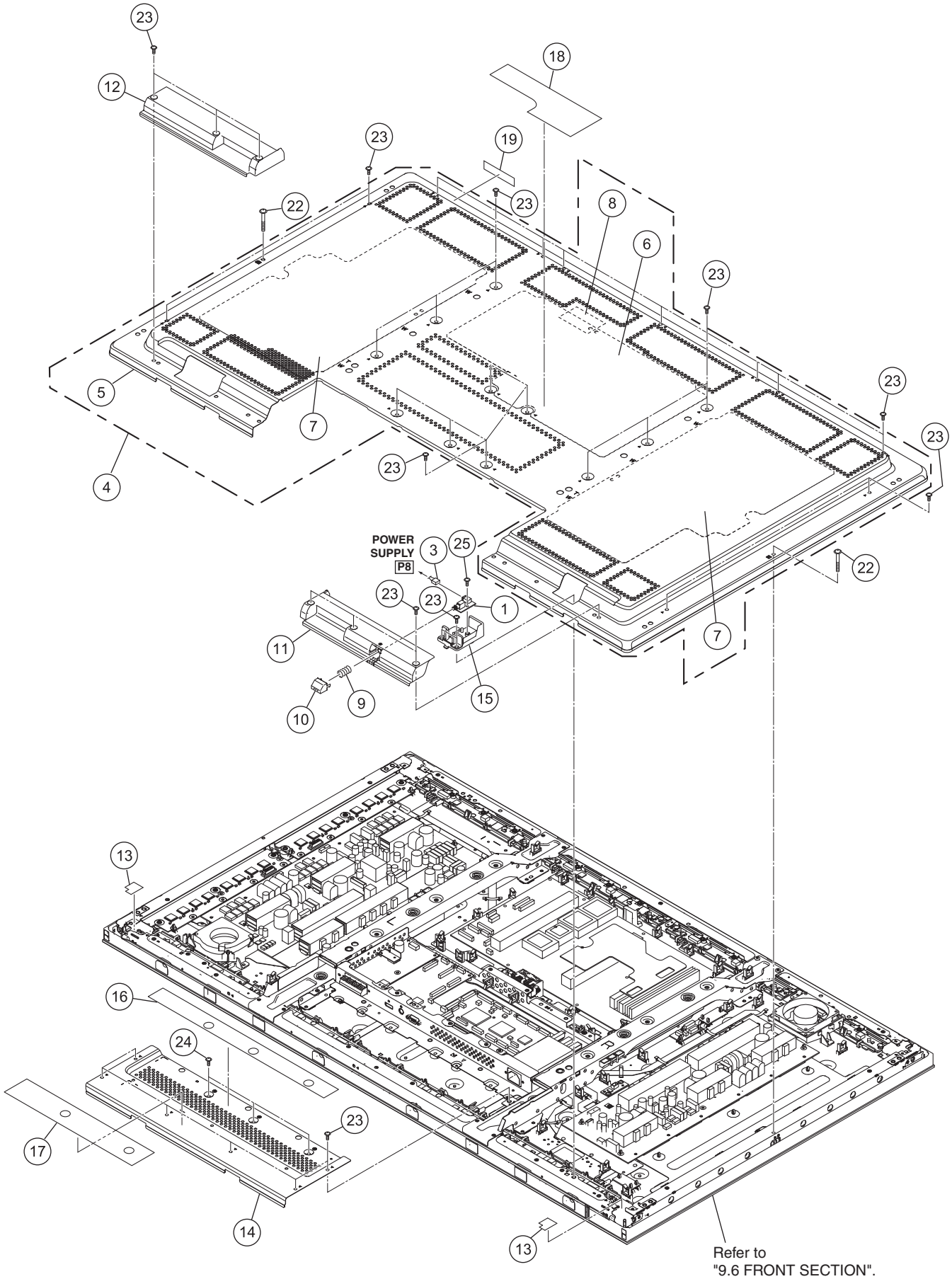
9.4 PACKING SECTION (KRP-500P/WA5)



PACKING SECTION PARTS LIST (KRP-500P/WA5)

Mark	No.	Description	Part No.
⚠	1	System Cable (2.9 m)	ADF1041
⚠	2	AC Power Cord	ADG1209
	3	•••••	
	4	Remote Control Unit	AXD1569
	5	Battery Cover (Black)	AZN2784
NSP	6	Dry Cell Battery (R6, AA)	VEM1031
	7	Binder Assy	AEC2158
	8	•••••	
	9	Cleaning Cloth	AED1285
⚠	10	Ferrite Core (L5321)	ATX1039
	11	•••••	
	12	•••••	
	13	Operating Instructions (Simp-Chinese)	ARC1610
	14	•••••	
	15	Caution Card (PC)	ARM1302
	16	Cleaning Caution 11L	ARM1283
	17	•••••	
	18	•••••	
NSP	19	Warranty Card	ARY1161
	20	•••••	
	21	Vinyl Bag	AHG1336
NSP	22	Vinyl Bag	AHG1340
	23	Accessory Box	AHC1083
	24	•••••	
	25	Pad (5095 T-L)	AHA2772
	26	Pad (5095 T-R)	AHA2773
	27	Pad (5095 T-C)	AHA2774
	28	Pad (5095 B-L)	AHA2775
	29	Pad (5095 B-R)	AHA2776
	30	Carton Board (50M JJ)	AHB1318
	31	Upper Carton (50P C)	AHD3737
	32	Under Carton (5090)	AHD3673
	33	Mirror Mat	AHG1284
	34	Nylon Binder	AEC-093
NSP	35	Power Button Info.	ARM1431

9.5 REAR SECTION



(1) REAR SECTION PARTS LIST

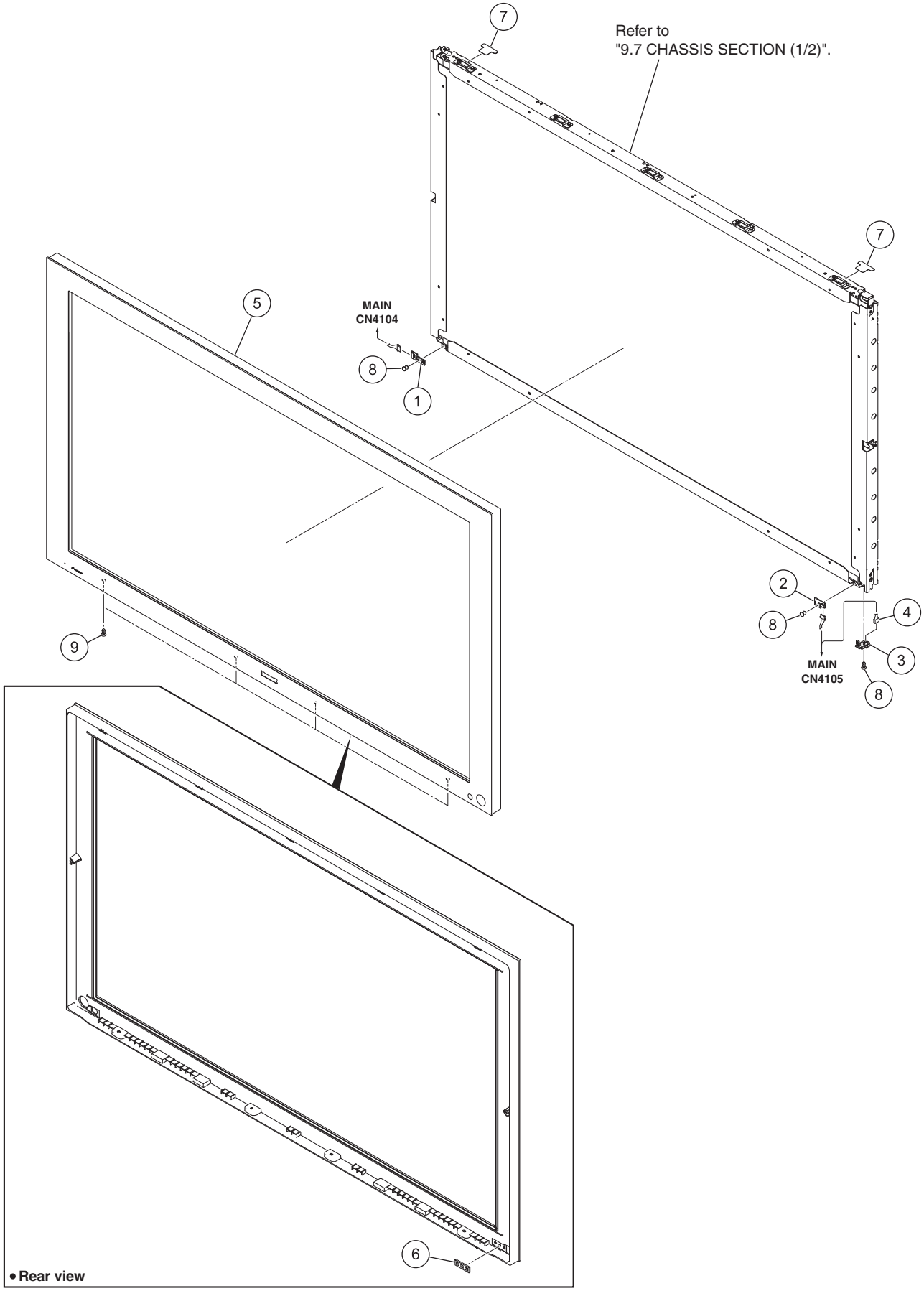
Mark	No.	Description	Part No.
	1	POW SW Assy	AWW1395
	2	•••••	
	3	3P Housing Wire (J103)	ADX3683
	4	Rear Case Service Assy	ANE1690
NSP	5	Rear Case (509M)	ANE1682
⚠NSP	6	Rear Case Sheet A 509	AMR3922
⚠NSP	7	Rear Case Sheet B 509	AMR3923
⚠NSP	8	Rear Shield (509M)	ANK1997
	9	Coil Spring	ABH1125
	10	Power Button	AAD4162
	11	Under Grip R (50F)	AMR3897
	12	Under Grip LS (50F)	AMR3899
	13	Sensor Cushion B (428)	AEB1486
	14	Under Cover (509M)	ANE1683
	15	Power Button Support	AMR3840
	16	Terminal Label	See Contrast table (2)
NSP	17	Name Label	See Contrast table (2)
	18	Caution Label	See Contrast table (2)
	19	Serial Sheet	AAX3143
	20	•••••	
	21	•••••	
	22	Screw (3 x 25 P)	ABA1380
	23	N Grip Screw (M3 x 6)	ABA1381
	24	Screw (B3 x 8)	ABA1389
	25	Screw	APZ30P080FTB

(2) CONTRAST TABLE

KRP-500P/WYSIXK5, WYS5, LFT and WA5 are constructed the same except for the following:

Mark	No.	Symbol and Description	KRP-500P /WYSIXK5	KRP-500P /WYS5	KRP-500P /LFT	KRP-500P /WA5
	16	Terminal Label 50S-EU	AAX3607	AAX3607	Not used	Not used
	16	Terminal Label 50S-G	Not used	Not used	AAX3633	Not used
	16	Terminal Label 50S-CH	Not used	Not used	Not used	AAX3608
NSP	17	Name Label (50P-EU)	AAL3074	Not used	Not used	Not used
NSP	17	Name Label (50P-EUJ)	Not used	AAL3075	Not used	Not used
NSP	17	Name Label (50P-G)	Not used	Not used	AAL3076	Not used
NSP	17	Name Label (50P-C)	Not used	Not used	Not used	AAL3078
	18	Caution Label 50M-EU	AAX3620	AAX3620	AAX3620	Not used
	18	Caution Label (50P-C)	Not used	Not used	Not used	AAX3622

9.6 FRONT SECTION

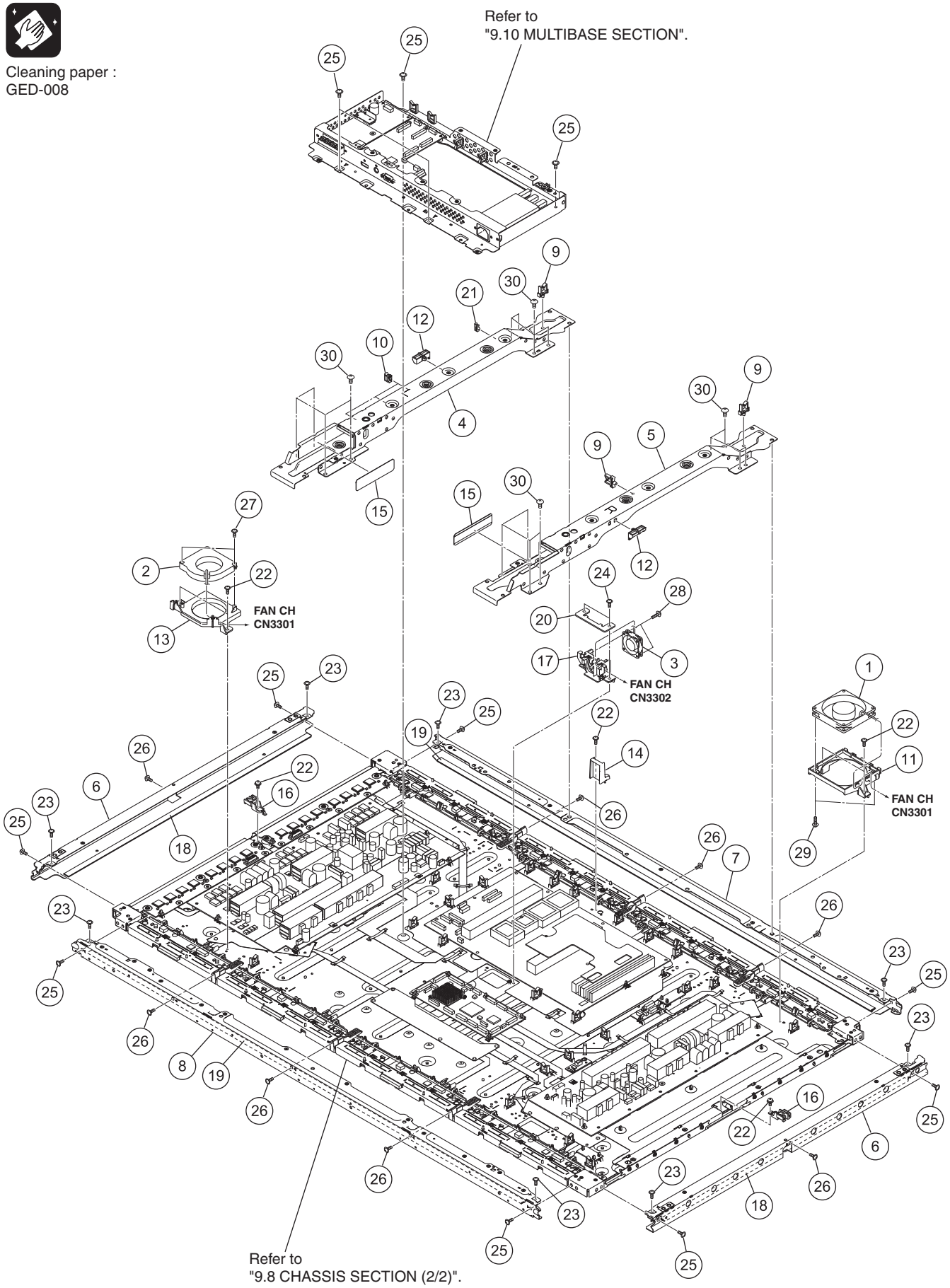


FRONT SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	LED Assy	AWW1399
	2	RLS Assy	AWW1401
	3	IR Assy	AWW1400
	4	6/3/3P Housing Wire (J117)	ADX3712
	5	F-Case Assy (500SEP)	AMB3108
	6	Blind Cushion (508F)	AEB1479
	7	FC Gate Sheet	AMR3906
	8	Nylon Rivet	AEC1671
	9	Rivet (Plastic)	AEC1877

9.7 CHASSIS SECTION (1/2)

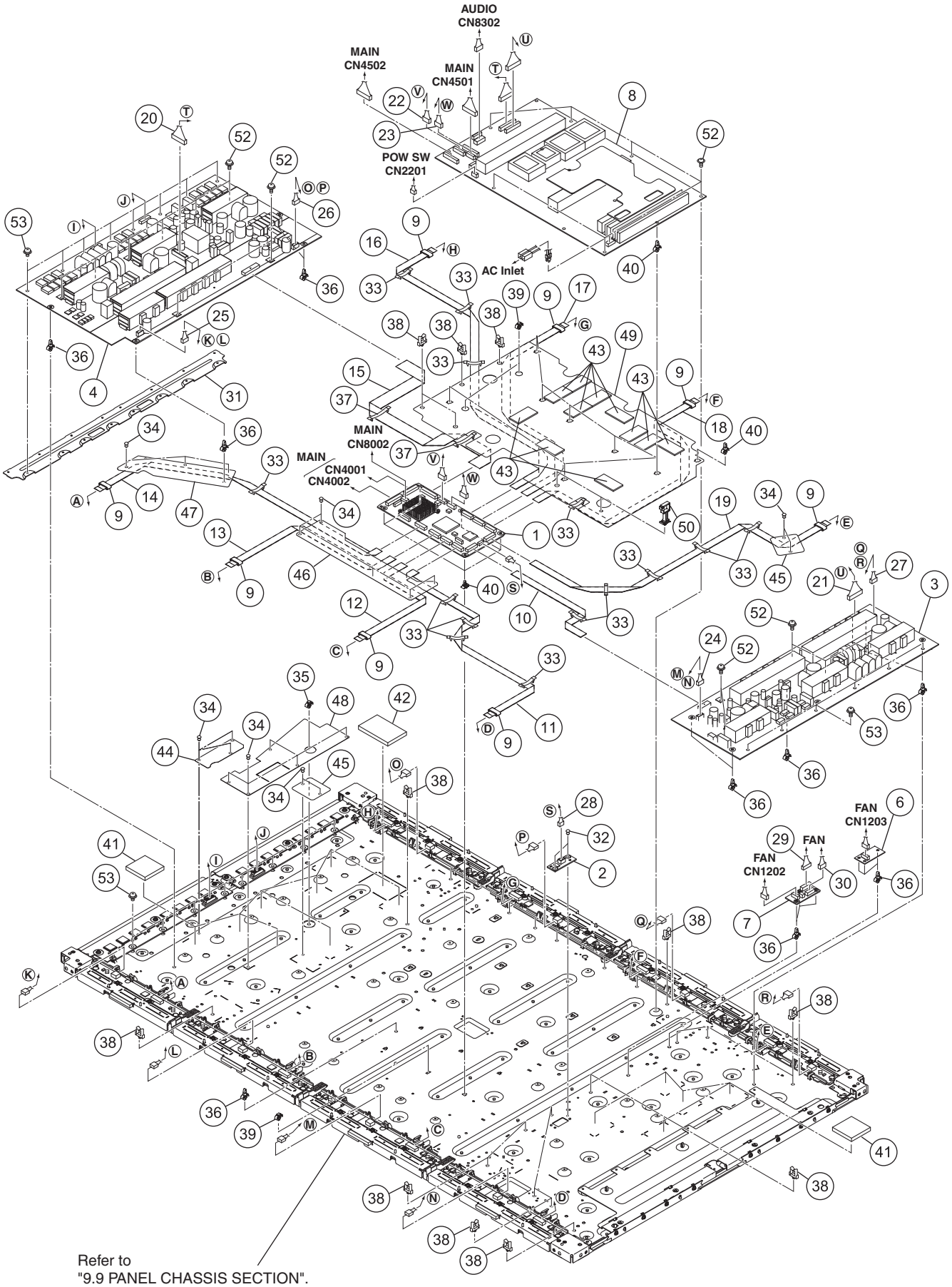
Cleaning paper :
GED-008



CHASSIS SECTION (1/2) PARTS LIST

Mark	No.	Description	Part No.
⚠	1	DC FAN Motor 80 x 15L	AXM1065
⚠	2	DC FAN Motor 75 x 12T	AXM1066
⚠	3	DC FAN Motor 40 x 10L	AXM1067
	4	Sub Frame L Assy (509)	ANA2202
	5	Sub Frame R Assy (509)	ANA2205
⚠	6	F. Chassis V (509M)	ANA2208
⚠	7	F. Chassis HT Assy 509	ANA2212
⚠	8	F. Chassis HB Assy 509	ANA2210
	9	Reuse Wire Saddle	AEC2134
	10	Slide Clamp	AEC2166
	11	FAN Bracket	AMR3805
	12	Drive Wire Saddle	AMR3850
	13	FAN Bracket HP	AMR3862
	14	Rear Case Support	AMR3873
	15	Sub Frame Sheet (509M)	AMR3888
	16	Support Bracket 509M	AMR3896
	17	FAN Bracket P	AMR3901
⚠	18	Front Gasket V50	ANK1963
⚠	19	Front Gasket H50	ANK1964
NSP	20	FAN Plate	ANG3221
	21	Wire Clip	AEC1948
	22	Screw	ABA1351
	23	N Grip Screw (M3 x 6)	ABA1381
	24	Screw (B3 x 12)	ABA1395
	25	Screw	ABZ30P080FTC
	26	Screw	APZ30P080FTB
	27	Screw	BPZ30P080FTB
	28	Screw	BPZ30P160FTB
	29	Screw	PPZ50P100FTB
	30	Screw	TBZ40P060FTC

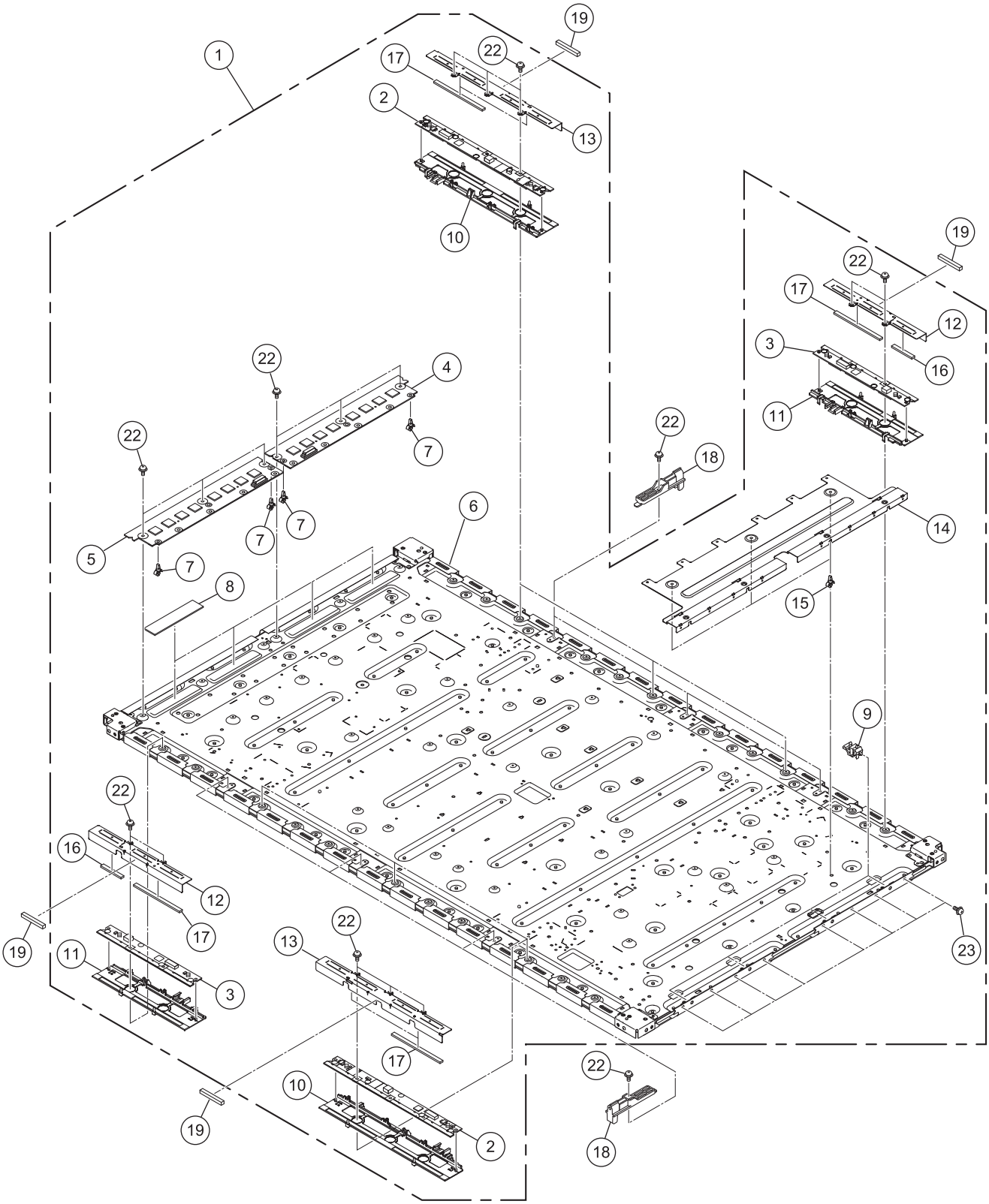
9.8 CHASSIS SECTION (2/2)



CHASSIS SECTION (2/2) PARTS LIST

Mark	No.	Description	Part No.
	1	50F DIGITAL Assy	AWW1368
	2	SENSOR Assy	AWW1340
	3	50F X DRIVE Assy	AWV2599
	4	50F Y DRIVE Assy	AWV2600
	5	•••••	
	6	SENS Assy	AWW1396
	7	FAN CH Assy	AWW1397
⚠	8	POWER SUPPLY Unit	AXY1203
⚠	9	Ferrite Core (F1 - F8)	ATX1072
	10	Flexible Cable (J201)	ADD1572
	11	Flexible Cable (J202)	ADD1573
	12	Flexible Cable (J203)	ADD1574
	13	Flexible Cable (J204)	ADD1575
	14	Flexible Cable (J205)	ADD1576
	15	Flexible Cable (J206)	ADD1577
	16	Flexible Cable (J207)	ADD1578
	17	Flexible Cable (J208)	ADD1579
	18	Flexible Cable (J209)	ADD1580
	19	Flexible Cable (J210)	ADD1581
	20	12P/11P Housing Wire (J101)	ADX3677
	21	11P Housing Wire (J102)	ADX3678
	22	10P Housing Wire (J106)	ADX3680
	23	6P Housing Wire (J107)	ADX3684
	24	5/3/3P Housing Wire (J112)	ADX3686
	25	5/3/3P Housing Wire (J113)	ADX3687
	26	5/3/3P Housing Wire (J114)	ADX3688
	27	5/3/3P Housing Wire (J115)	ADX3689
	28	5P Housing Wire (J108)	ADX3690
	29	9/3/3P Housing Wire (J130)	ADX3691
	30	7/3/3P Housing Wire (J131)	ADX3692
	31	Plate Y (509)	ANG3127
	32	Nylon Rivet	AEC1671
	33	Flat Clamp	AEC2132
	34	Nylon Rivet	AEC2089
	35	Reuse Card Spacer	AEC2117
	36	PCB Spacer (Reuse)	AEC2122
	37	Flat Clamp	AEC1879
	38	Reuse Wire Saddle	AEC2134
	39	Reuse Card Spacer S	AEC2153
	40	Reuse PCB Spacer 4.5B	AEC2161
	41	Drive Sheet	AEH1155
	42	Drive Sheet Y	AEH1186
	43	Power Silicon Sheet	AEH1187
	44	Y Drive Sheet B	AMR3769
	45	FAN Sheet	AMR3786
	46	DIGITAL Sheet	AMR3822
	47	Drive Sheet	AMR3829
	48	Y Drive Sheet A (M)	AMR3881
⚠	49	Power Sheet	AMR3902
	50	Reuse Fastener	AEC2133
	51	•••••	
	52	Screw	ABA1351
	53	Screw	ABA1364

9.9 PANEL CHASSIS SECTION



(1) PANEL CHASSIS SECTION PARTS LIST

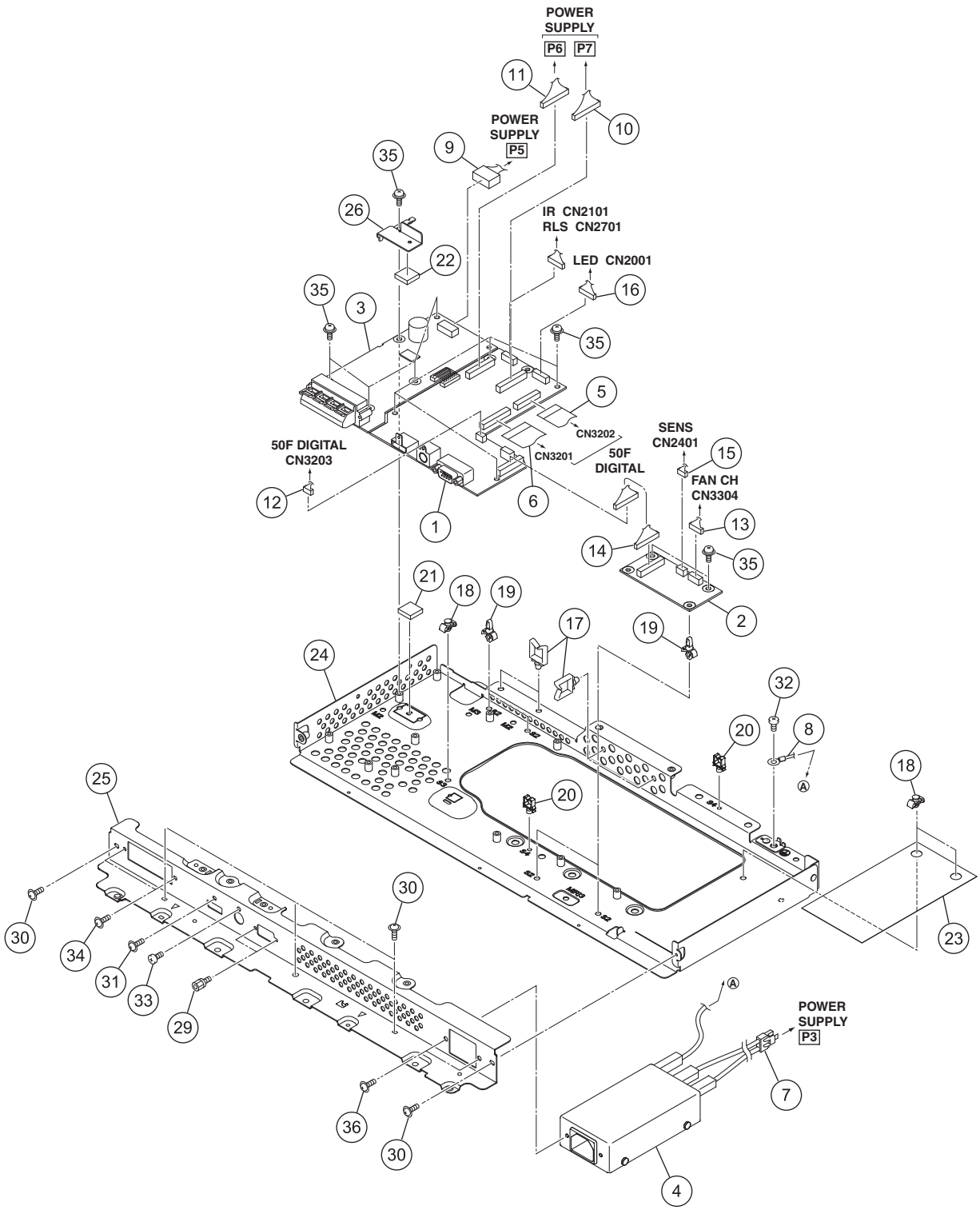
Mark	No.	Description	Part No.
NSP	1	P. Chassis Assy	See Contrast table (2)
NSP	2	50F ADDRESS L Assy	AWW1348
NSP	3	50F ADDRESS S Assy	AWW1349
NSP	4	50F SCAN A Assy	AWW1350
NSP	5	50F SCAN B Assy	AWW1351
NSP	6	P. Panel (50FE) Assy	AWU1349
	7	Reuse PCB Spacer 4.5	AEC2148
	8	Heat Radiation Sheet	AEH1134
	9	Plate Holder	AMR3757
	10	Holder L Assy (509)	AMR3775
	11	Holder S Assy (509)	AMR3776
⚠	12	Address Plate S (509)	ANG3129
⚠	13	Address Plate L (509)	ANG3130
	14	Plate X (509)	ANG3128
	15	PCB Spacer (Reuse)	AEC2122
	16	Address Silicon TS	AEH1160
	17	Address Silicon TL	AEH1161
	18	FC Holder	AMR3895
⚠	19	Gasket ADH-FCH	ANK1850
	20	•••••	
	21	•••••	
	22	Screw	ABA1351
	23	Screw	ABA1364

(2) CONTRAST TABLE

KRP-500P/WYSIXK5, WYS5, LFT and WA5 are constructed the same except for the following:

Mark	No.	Symbol and Description	KRP-500P /WYSIXK5	KRP-500P /WYS5	KRP-500P /LFT	KRP-500P /WA5
NSP	1	P. Chassis (509FE) Assy	AWU1350	Not used	Not used	Not used
NSP	1	P. Chassis (509J) Assy	Not used	AWU1357	AWU1357	AWU1357

9.10 MULTIBASE SECTION



(1) MULTIBASE SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	MAIN Assy	AWW1393
	2	FAN Assy	AWW1394
	3	AUDIO Assy	AWW1398
⚠	4	AC Inlet (CN1)	AKP1336
	5	Flexible Cable (J211)	ADD1582
	6	Flexible Cable (J212)	ADD1583
⚠	7	Housing Wire (J104)	ADX3679
⚠	8	Housing Wire (J105)	ADX3651
	9	5P Housing Wire (J111)	ADX3706
	10	15P Housing Wire (J110)	ADX3707
	11	14P Housing Wire (J109)	ADX3708
	12	6P Housing Wire (J140)	ADX3700
	13	6P Housing Wire (J121)	ADX3709
	14	13P Housing Wire (J133)	ADX3702
	15	3P Housing Wire (J134)	ADX3710
	16	7/6P Housing Wire (J116)	ADX3711
	17	Wire Saddle	AEC1745
	18	PCB Support	AEC1938
	19	PCB Spacer (Reuse)	AEC2087
	20	Reuse Mini Saddle	AEC2160
	21	Silicon Sheet MTB A	AEH1174
	22	Silicon Sheet	AEH1177
⚠	23	Inlet Shield (509M)	ANK1998
	24	Multi Base Assy SEP	ANA2229
	25	Terminal Panel SEP	ANC2479
	26	AUDIO Heatsink	ANH1723
	27	•••••	
	28	•••••	
	29	Hexagon Headed Screw	ABA1382
	30	N Grip Screw (M3 x 6)	ABA1381
	31	Screw	AMZ30P060FTB
⚠	32	Screw	BMP40P080FSN
	33	Screw	BMZ30P060FTB
	34	Screw	BPZ30P080FTB
	35	Screw	PMB30P060FNI
	36	Screw	See Contrast table (2)

(2) CONTRAST TABLE

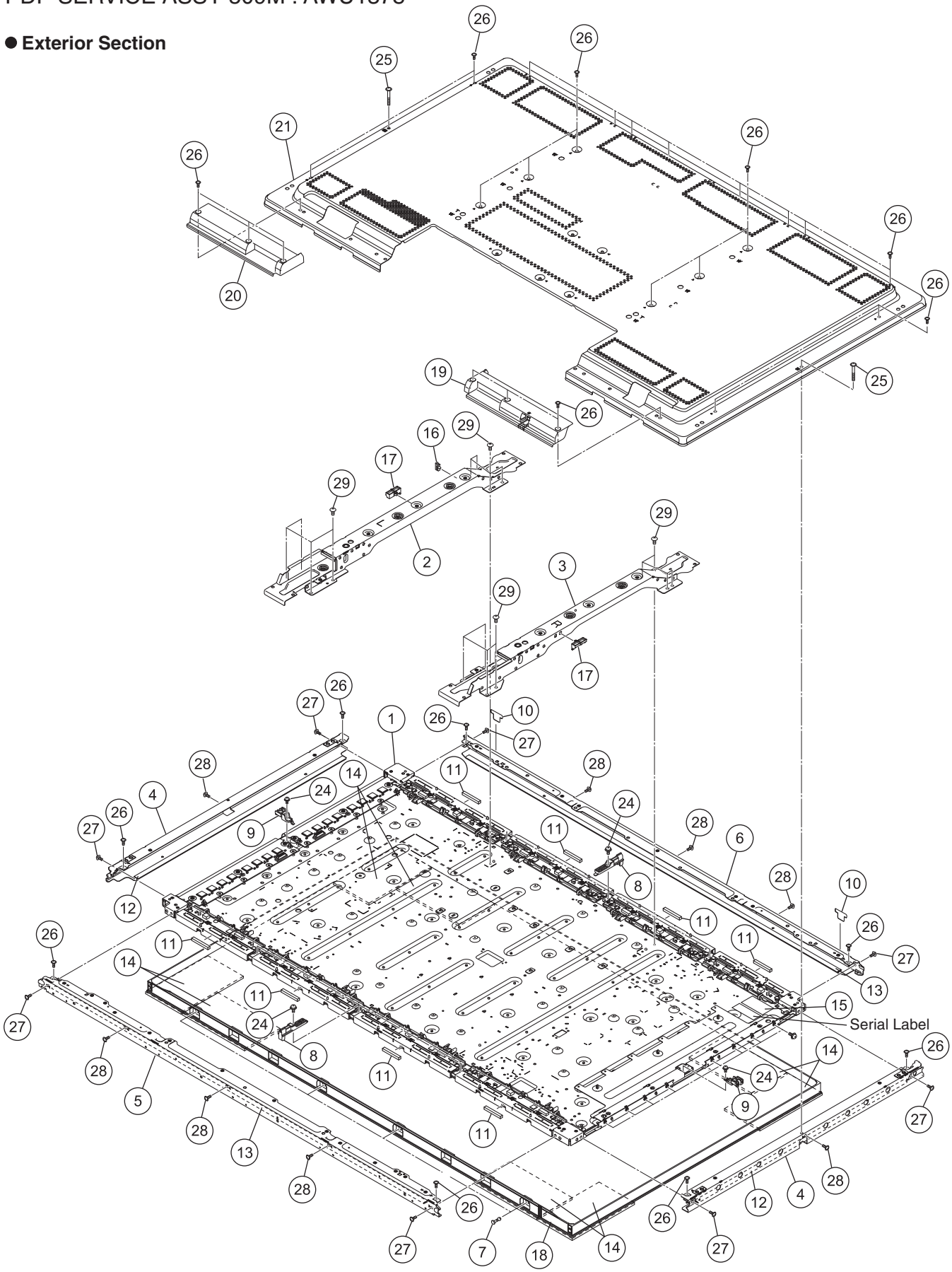
KRP-500P/WYSIXK5, WYS5, LFT and WA5 are constructed the same except for the following:

Mark	No.	Symbol and Description	KRP-500P /WYSIXK5	KRP-500P /WYS5	KRP-500P /LFT	KRP-500P /WA5
	36	Screw	Not used	AMZ30P060FTB	AMZ30P060FTB	AMZ30P060FTB
	36	N Grip Screw (M3 x 6)	ABA1381	Not used	Not used	Not used

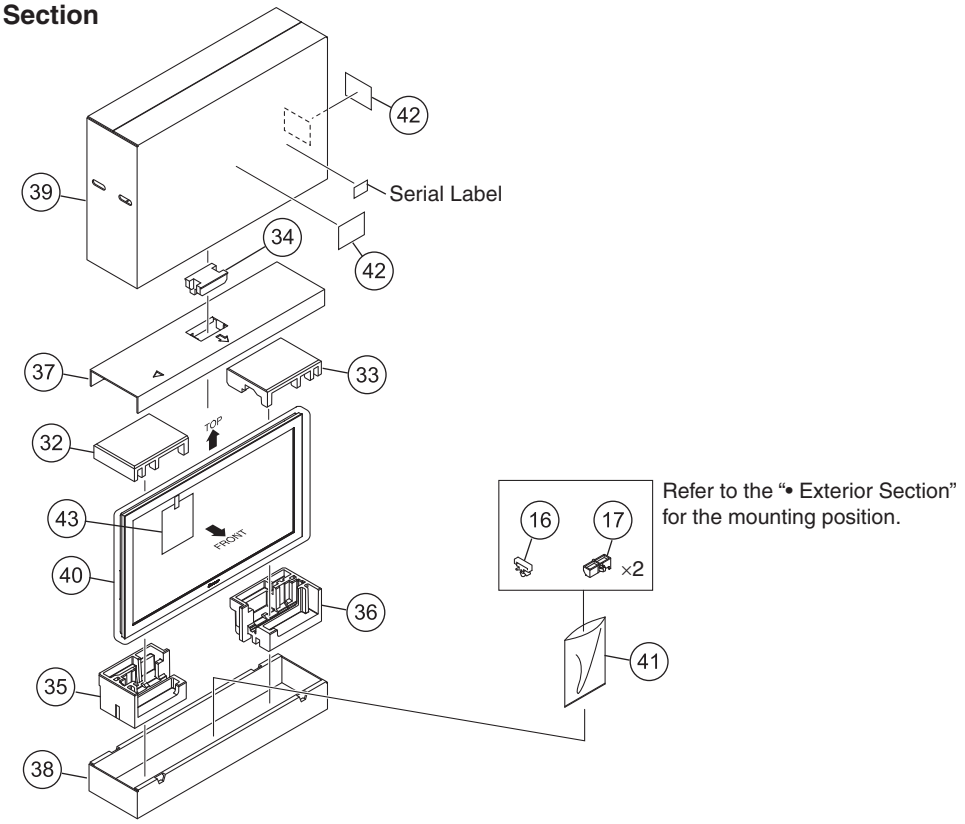
9.11 PDP SERVICE ASSY

PDP SERVICE ASSY 509M : AWU1378

● **Exterior Section**



● **Packing Section**



PDP SERVICE ASSY PARTS LIST

Mark	No.	Description	Part No.
NSP	1	P. Chassis (509J) Assy	AWU1357
	2	Sub Frame L Assy (509)	ANA2202
	3	Sub Frame R Assy (509)	ANA2205
	4	F. Chassis V (509M)	ANA2208
	5	F. Chassis HB Assy 509	ANA2210
	6	F. Chassis HT Assy 509	ANA2212
	7	Rivet (Plastic)	AEC1877
	8	FC Holder	AMR3895
	9	Support Bracket 509M	AMR3896
	10	FC Gate Sheet	AMR3906
	11	Gasket ADH-FCH	ANK1850
	12	Front Gasket V50	ANK1963
	13	Front Gasket H50	ANK1964
	14	Service Pad	AEC2105
NSP	15	Drive Voltage Label	ARW1097
	16	Wire Clip	AEC1948
	17	Drive Wire Saddle	AMR3850
NSP	18	Front Service Assy	AMB3103
	19	Under Grip R (50F)	AMR3897
	20	Under Grip LS (50F)	AMR3899
NSP	21	Rear Case (509M)	ANE1682
	22	•••••	
	23	•••••	
	24	Screw	ABA1351
	25	Screw (3 x 25 P)	ABA1380

Mark	No.	Description	Part No.
	26	N Grip Screw (M3 x 6)	ABA1381
	27	Screw	ABZ30P080FTC
	28	Screw	APZ30P080FTB
	29	Screw	TBZ40P060FTC
	30	•••••	
	31	•••••	
	32	Pad (5095 T-L)	AHA2772
	33	Pad (5095 T-R)	AHA2773
	34	Pad (5095 T-C)	AHA2774
	35	Pad (5095 B-L)	AHA2775
	36	Pad (5095U B-R)	AHA2776
	37	Carton Board (50M JJ)	AHB1318
	38	Under Carton (5090)	AHD3673
	39	Upper Carton (509F-SV)	AHD3716
	40	Protect Sheet	AHG1331
	41	Vinyl Bag S	AHG1338
	42	Caution Label	AAX3031
NSP	43	Caution Sheet (9G)	ARM1398